

SOIL REMINERALIZATION

A Network Newsletter

Volume III, Number 14

SUMMER 1989

"Doing a pot test is the most convincing argument I know of. Anybody can do it. There are testing laboratory grinders everywhere. There is no lag time. In 6 hours you can get a microorganism population explosion. Taking some 6" clay pots, I filled them with a 50-50 mixture of earth and peat and 3 heaped tablespoons of dust. The results were astonishing!"

John Hamaker



Global warming theorists attend a conference

Soil Remineralization

A Network Newsletter

The newsletter is a reflection, forum, round table of ideas, experiences and research of those concerned with networking and implementing soil remineralization.

Articles, letters, and photos are welcome and appreciated. It reaches an emerging grass roots community network around the world.

Microorganisms produce the protoplasm of all living things. Microorganisms themselves feed on the total mixture of minerals and gases in the biosphere, and are energized by carbon. We can build enormous per acre tonnages of protoplasm into the soil in a very short time—enough so that sun energy reaching the plant becomes the limit of growth. The foods of microorganisms are the cheapest raw materials on earth.

John Hamaker
The Survival of Civilization

Eden or Ice Age- Which Will We Choose?

The book *The Survival of Civilization* by John Hamaker and Don Weaver is regarded by a growing movement worldwide as a blueprint for the survival of the earth, restoring ecological balance and, perhaps, even recreating Eden.

The remineralization of forests, farms, orchards and gardens with glacial gravel and rock dust is nature's way to regenerate and fertilize soils. During an ice age, as glaciers grind rock to a fine dust over millennia, a fertile soil is created. Adding finely ground gravel dust is a tremendous boost to organic agriculture and can make it truly viable by adding up to a hundred trace minerals and elements needed by all life and by nourishing the microorganisms in the soil, whose protoplasm is the basis of all living things.

There is evidence to suggest that as forests begin to die off worldwide, giving off carbon dioxide, the climate of the earth is altered, triggering the transition from the warm interglacial to an ice age. We are hastening this process with the burning of fossil fuels.

Undertaking the task of remineralization is urgent to restore our agricultural soils and to save the dying forests in the temperate latitudes and stabilize our climate.

Soil Remineralization, A Network Newsletter
is available for \$12.00 (\$15.00 for first class U.S. postage or for international subscriptions), 3-4 issues a year from Joanna Campe, 152 South Street, Northampton, Massachusetts, 01060 U.S.A.

Features

Making Pot Tests	4
by John Hamaker	
Stoned in Sonoma	5
by Eric Gibson	
The Burning, The Drying	6-7
by Mark Nathaniel Mead	
On The Edge of Starvation	8-9
by Larry Ephron	
Warming? Not	
Just Glaciation and	
Starvation	
by John Hamaker	10-12
Cloud Hidden Secrets-	
Unveiling the Coming Ice Age	
by Mark Nathaniel Mead	14

International

Last Chance Newsletter- People For A Future	12-13
World Constitution and Parliament Association	
by Phillip Isely	15

Regular Features

Gravel and	
Rock Dust Sources	16
Hamaker Coordination	17
Letters and Forum	18-21
Network Listing	22
Subscriptions 1989	23

The Survival of Civilization (\$12.00) and *The Solar or Ice Age? Bulletin* (\$5.00 donation) can be ordered from Hamaker-Weaver Publishers, P.O. Box 1961, Burlingame, CA 94010

On the Cover:

Cartoon by artist Steven Johnson.

A sense of humor and light touch along with passion and commitment can help to take the most serious issue a long way!

In This Issue

Ice Age Is Coming, Warns Scary Film

By Charles Petit
Chronicle Science Writer

Many scientists worried that the world is warming up in a global greenhouse wish pesky old John Hamaker would just go away, and take his apocalyptic ice age idea with him.

But he won't.

Beginning on a slightly discouraging note, the future of this newsletter is somewhat at risk. There has been a disappointing number of re-subscriptions and the newsletter must increase or at least maintain current subscriptions, surely not decrease, in order to be able to continue in future. Please do send a subscription if you have not so far. The second issue of 1989 is being sent to all 1988 subscribers.

There are a few additions to the **Gravel Source** list. Cort Hooper of Calico Rock is especially newsworthy as he plans to produce finely ground gravel dust for distribution within a few months and will be able to sell and ship it by rail at very reasonable rates. This is a gravel source to watch and we will have more information in the next issue. If you are looking for a source, I suggest contacting him and getting on his mailing list.

On the very practical side of remineralization, John Hamaker offers good advice in **Making Pot Tests**.

Do consider taking part in and supporting both the **World Balance** conference and the coming conference of the **World Constitution and Parliament Association**.

Perhaps the next issue will have an interview with Bob Cannard of the **Stoned in Sonoma** article which appeared in **The California Farmer** and has been reproduced with permission here.

Last Chance is a coming newsletter put out by **People For A Future's** Larry Ephron and his most recent networking effort. It is very well done. His climate summary article in this issue, **On The Edge of Starvation** gives readers more networking material.

Ice Age Film Warns of Apocalypse

"Stopping the Coming Ice Age," a convincing enough and scary movie full of glaciers and charts to be shown tomorrow evening at 7 and again at 8:45 at the Kabuki Theatre at Post and Fillmore, shows what the fuss is all about.

The Solar or Ice Age? Bulletin is nearly ready and will be out soon. For a copy send a check to Don Weaver (the mailing form is in last issue), address listed on page 2. This is a very valuable resource as we need to be informed as much as possible and there is a tremendous amount of information and inspiration to be found in the Bulletin. It is the great inspiration and parent of this newsletter.

A review of the **Stopping the Coming Ice Age** documentary film recently appeared in the San Francisco Chronicle. The journalist Charles Petit wrote as the lead-in, "Many scientists worried that the world is warming up in a global greenhouse wish pesky old John Hamaker would just go away, and take his apocalyptic ice age idea with him." We are referred to as his "band of acolytes". We are very ready to have the serious scrutiny of policy makers, scientists and the public. One has to hope that attention will grow as the urgency escalates and that the climate and remineralization issues will not be put to rest unless at some point they deserve to be. That is *certainly* not the case so far. Attending climate conferences around the world and following recent research still convinces me John's ideas are not "kooky". What I do find "kooky" is the fact that computer modeling leaves out the most crucial biospheric data and is being taken so seriously! Or the fact that civilization supports the poisoning of our soils and us through the use of petrochemical fertilizers and insecticides and pesticides!

I am pleased to add the contributions of Mark Nathaniel Mead on **The Burning, The Drying** of forests and his article on climate, **Cloud-Hidden Secrets**.

I am most of all pleased to continue to have the valuable contributions of John Hamaker to the newsletter in his response to letters of readers, his essays and his practical articles. **SR** is very lucky to be able to print John's latest word in each issue. The letter of Marian Rose sent from Japan and her lack of success with pot tests in India inspired John to give his advice and results with recent pot tests in **Making Pot Tests**.

One of my favorite sections is **Letters and Forum** and it becomes more of a forum all the time. It is the one place where readers have an opportunity to communicate with each other. Very exciting is the letter from Kemal Pince from Turkey and his tests of remineralization and project plans for developing a rock dust industry that could serve farmers and greenhouse farming there. Piet Bouter has put together a useful survey for quarries and farmers. Thank you, Judith and Rick Roberts and Father Phillip Kelly for photos of your gardens and plants reproduced here.

Thank you all for all your good wishes for Gaea and myself. I would like to thank Kalpana Devi and Wes Brown for their help on this issue, without which, there would be no issue. And thank you for your contributions to help support the newsletter financially and to the newsletter itself which is a reflection of all of you.

Joanna Campe

Making Pot Tests

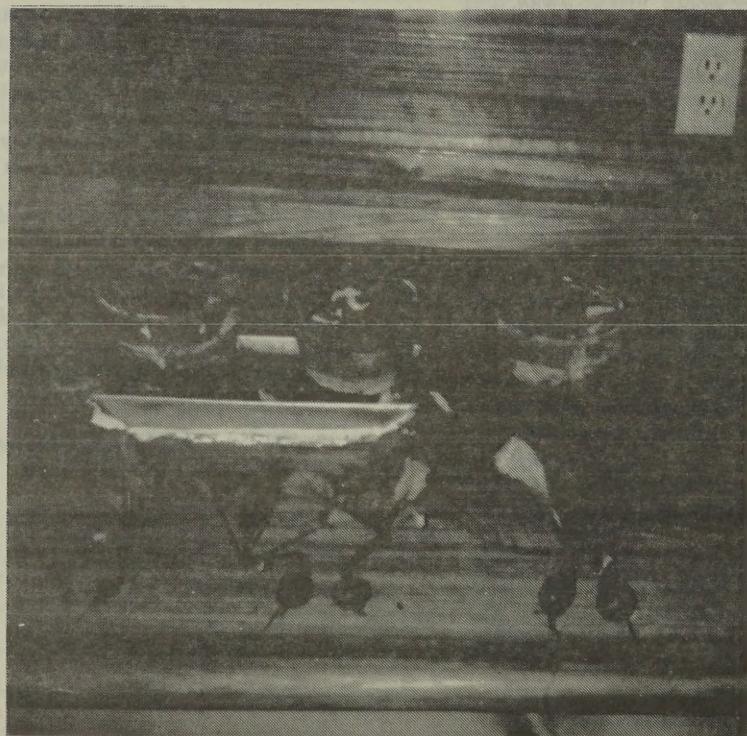
by John Hamaker

This pot test is for all those who have reported no results from their testing of gravel dust.

From left to right pot No. 1 has local ground gravel dust. Pot No. 2 has local dust plus limestone dust. Pot No. 3 has natural ground glacial gravel dust from a Michigan glacial moraine. All plants are spindly because they had only the morning sunshine of a weak winter sunlight passing through two panes of glass.

We are located on the Ozark plateau at 1600 ft. elevation. It's a good place to be for clean well water but a poor place to get gravel from the creeks. From the plateau the headwater streams flow northeast to the Missouri River or southeast to the Mississippi River. These rivers carry glacial ground sands and gravels. The streams that start on the plateau drop hundreds of feet to reach the rivers. In so doing they cut through many layers of sea floor. Limestone, which is obviously beneficial to the local mix, can be found a couple of hundred feet below the plateau. There may be suitable gravel in the streams at 1400 ft elevation and lower.

What is needed is for the U.S.D.A. to get all associated agricultural research units busy locating and evaluating all deposits of dust, gravel and sand which have a spectrographic analysis similar to the tables of abundance of elements in the first 20 elements arranged according to abundance. The spectrographic tests should be backed up by pot tests.



If we are to survive we must have growth of plant life as in pot No. 3. That sort of growth indicates that the natural mix of elements produces a population explosion of the broad spectrum of micro-organisms necessary to provide all the protoplasm compounds required to support health and vigor in the living organisms.

The people who say they do not have good luck with gravel dust are looking in the wrong place for their gravel. I ground the local gravel dust simply to test a grinder I had built. When I and two other boys visited the Ozarks about sixty years ago the forests were still recycling minerals left by glaciation. Those minerals are now largely gone from the land having been removed by harvesting the timber. The regrowth is a sickly imitation of the trees that were here sixty years ago.

Marian Rose [see Letters pp. 19-20] writes of an attempted gravel dust pot test in India. I assume she was in southern India where the likelihood of finding a glacial mix of gravel is just about zero. The tip of India is at the equator and there are high mountains. The Ganges mouth and probably all the deltas are loaded with glacial outwash. Getting good dust to the south will probably require a government program. The situation in southern India is probably the same as here on the Ozark plateau. A few layers of sea floor sediments are very unlikely to give a good mix of elements.

Stoned in Sonoma

Bob Cannard's innovative rocky fertilizer produces smooth results.

by Eric Gibson

Bob Cannard's farming practices—particularly using raw, crushed river rock as the basis of his fertilizer program and letting weeds grow freely between rows of his vegetable crops—have members of the scientific community scratching their heads.

Bill Liebhardt, director of UC's sustainable agriculture program, puts it this way: "Not many farmers would be willing to do things the way Bob Cannard does. His system appears to work for him, but I'm not sure it would work for others. We need to study it a lot more closely."

Though Cannard's methods may be questionable, no one can question his results—his produce is superb. In addition to having developed a hefty, repeat-customer clientele in several Sonoma County farmers markets, Cannard also grows most of the produce used at the internationally renowned Chez Panisse restaurant in Berkeley. That restaurant's owner, Alice Waters, is credited with having started the California cuisine cooking style, which emphasizes the freshest produce, simply prepared.

Pat Waters, Alice's father, conducted a farm survey of 20 of the finest farms in the area to choose the restaurant garden for Chez Panisse. He says of Cannard's produce: "It really meets Alice's criteria of being 'the freshest and the finest'...he's right out there on the cutting edge of quality."

"It has more flavor, even compared to the other organic produce we get," says Paul Bertolli, head chef at Chez Panisse. "It has a very genuine taste, a taste of the soil. The lettuce, in particular, has an herbaceous quality, which I think proves Bob's point that plants share the aroma of surrounding plants. It's a wild taste that perhaps everyone won't like, but compared to the washed-out, supermarket taste, I welcome it."

Cannard's 20-acre farm snuggles on a hillside slope about 5 miles south of Glen Ellen in the Sonoma Valley. He grows a variety of annual crops, including vegetables and herbs, as well as berries, grapes, and mixed tree crops. The farm yields about 30,000 produce boxes a year about 40 percent of which goes to Chez Panisse. He sells the rest at farmers markets in the area.

A college dropout after four semesters in agricultural science, Cannard says he discovered his unusual method of cultivation 12 years ago when he owned a nursery. He was trying to make a clear space for container plants so he spread layers of crushed river rock over his lot "but the weeds shot up like crazy," he says.

When he began farming shortly thereafter, Cannard began putting a thin layer of crushed river rock around each plant, followed by a layer of compost, and then wetting it. The wet manure creates an acid condition, he says, which breaks down the rock powder so that the plant can absorb the nutrients.

Spreading the compost or manure on top of the crushed rock is vital for another reason: Living microbial organisms are introduced, that, in addition to the acidity, are vital to breaking down the rock's nutrients. "If you just add crushed rock to a dead soil," Cannard says, "it's just like adding cement. You need the living action of the microbial flora to assimilate the nutrients."

To supplement the common compost ingredients of manure and straw, Cannard adds the Chez Panisse kitchen wastes, which the restaurant truck delivers as it comes to pick up the day's produce.

"My fertilizer costs \$15 a ton, and my plants are so healthy that I don't have any pest problems," Cannard says. Cannard purchases his river rock from local rock crushers on the Russian River who supply crushed stone to the asphalt industry. He adds about 400 pounds of rock per acre to the soil. Cannard is now constructing his own rock crusher from old iron tractor wheels to break down the powder even more finely, for greater surface-area coverage and quicker absorption.

Cannard claims he uses only crushed rock, oyster shells, and compost on his crops, yet he is no organic purist. "If you get good results with urea," he says, "use it. Sometimes such products are needed to help revitalize a dead soil."

But he pursues his point that the full range of nutrients needed by plant life, especially in what he calls our depleted, mineral-deficient soils, can be supplied by only one fertilizer: crushed river

rock. Cannard calls river rock the "parent rock." Derived from rivers' sedimentary deposits, it provides the full range of mineral elements, including the infinite number of trace minerals lacking in any narrow-spectrum fertilizer.

His philosophy is that adding a more narrow-range fertilizer provides only a slice of the pie, which is "like telling the plant what it needs. Plants have evolved under natural growing conditions," he maintains, "which might provide only a few parts-per-million of some micronutrient such as gold. Artificial additives don't contain these micronutrients, yet who knows if the plants need them?"

On this point, Cannard feels he goes a step beyond the organic school of farming. "If you add only manure compost in mineral-deficient soils," he says, "you'll still get aphids." He claims that since adding crushed river rock to his soil, he's never had a pest or disease problem.

Cannard calls rivers "nature's rock crushers," and says that crushed rock from them is bound to have a rich spectrum of nutrients. "Rivers carry a tremendous organic load," he says, "everything from leaves to granite to basalt to dead insects. They mix it up and deposit it in the valleys."

As if adding rocks to his garden were not enough, Cannard cultivates another farmer's enemy: weeds. He calls weeds a "low-life cover crop" that yields the benefits of traditional cover crops: conserving soil moisture, preventing leach loss due to sun and water, providing an environment for beneficial insects, lessening compaction, and recycling nutrients.

In addition, the soil cover and support provided by the weeds growing between rows allows Cannard to pick in the rain or immediately following irrigation. Leaving weeds also allows him to plant more densely, since no tractor is needed for cultivating.

The key is not to let the weeds overpower productive plants, and Cannard goes in with a hand scythe when the weed foliage threatens the cash crop. He leaves about 3-6 inches of clean space around each plant. Time spent suppressing the weeds is about an hour per acre.

continued on page 7

THE BURNING, THE DRYING...

What is happening to our forests?

"The large number of dead and dying trees in our forest is directly attributable to the increasing acidity of our soils and decreasing quantities of available elements. Dead forests burn easily with a hot fire which oxidizes large quantities of atmospheric nitrogen. . . . The more trees die and burn, the more the soils become acidified and the more trees must die. . . ."

"It is imperative that the jungles be saved. . . . The burning of the temperate zone vegetation will carry huge quantities of carbon dioxide in the atmosphere. The waves of clouds now coming in off the Pacific on an almost daily schedule will give way to solid masses of clouds when all the forests have burned."

John Hamaker, *The Survival of Civilization*; pp. 55, 37

Fires are common in certain kinds of forests because of the prevailing climate, the inflammability of the vegetation, and other less obvious factors, such as soil pH. Long before the white man arrived in the New World, fires raged through the redwoods of northern California about four times a century during the two-thousand-year life of the stand. Further south, as indicated by examination of the stumps' growth rings, forest fires occurred every few years. Most of the blazes were probably caused by lightning; others were by Indians who burned forests to clear land and drive out game.

Fire can change a whole forest for decades to come. By clearing the forest floor of litter (dead plant material, leaves, and brush), killing seedlings and weakening the dominant trees, it sets up conditions favorable for certain trees usually quite different from those originally growing. These trees—notably pitch pine, jack pine, and other conifers—tend to thrive on barren, acidic soil and in full sunlight; they depend largely on periodic fires to survive.

In recent years, fire has become a growing menace to Earth's forests. In the spring of 1985, for example, North Carolina was the main fire area, but Florida, South Carolina, Alabama, and Tennessee were also affected. By late June, the entire American West seemed ablaze. About 1,200 separate fires raged, blackening some 180,000 acres of Western forest in the first week. Most fires were sparked by lightning hitting dry, starved trees on demineralized soil. By mid July, according to the February

1986 issue of *The Planet*, 100,000 acres in Southern California had gone up in smoke. On July 8 and 9, Americans nationwide witnessed televised pictures of thousands fleeing San Obispo as 30 foot high flames devoured homes, parks, and woodlands. In barely two weeks, from June 27 to July 11, more than 308,000 acres in California alone were consumed by the inferno.

By mid August, 1985, fourteen Western states were embroiled in fierce fire fighting. More than a million acres were scorched, calling forth the largest force of fire fighters ever assembled in the United States. The network news in July 1985 carried graphics depicting fires burning in California, Arizona, Oregon, Idaho, Nevada, Washington, Utah, New Mexico, Wyoming, Nebraska, Montana, and South Dakota, plus the Canadian provinces of British Columbia, Alberta and Manitoba—and these fires took place simultaneously!

While 1985 was a year of particularly vehement fires—the national Interagency Fire Center's resources had been completely tapped out in just two months—the following year the same thing happened in two weeks. And in the summer of '87, it took only two days. Scorching over two million acres in 7 Northwestern states the fires of '87 called out the greatest firefighting mobilization in the nation's history.

The summer of '88 again brought a formidable amount of burning throughout much of the Western states. By September, fires still burned in eight states, covering over 1 million acres on September 1, according to USA Today. Montana, Wyoming, Idaho, and Oregon, had the biggest tolls. By September 7, over 1 million acres of Yellowstone Park had become a charred war zone, costing \$2.3 million a day to fight. William Mott, Director of the National Forest Service, attributed the park's fires to the "unusually hot and dry weather conditions" of the summer. Fires were prohibited in most areas and some national parks had to be closed off to campers.

Throughout South America, according to researchers of Woodshole Research Center who have been studying the problem, huge tracts of rainforest are still being burned by slash-and-burn methods, mainly to create space for the American beef business and industrial development. A Brazilian scientist in communication with the Woodshole group reported that it was difficult leaving some airports because the smoke

by Mark Nathaniel Mead

was so dense. Indeed, the amount of CO₂ given off by these rainforest fires may soon surpass that given off by the Northern forests during this past summer. All of this amounts a gargantuan and largely irretrievable loss of natural CO₂ control.

It now seems clear that the greenhouse warming profoundly promotes the tendency for forests to catch fire. Based on evidence from ancient forest burns, Dr. James S. Clark of the University of Minnesota has traced the year-by-year relationship between climate and fire in Minnesota forests for the past 750 years. Clark found that the frequency of forest fires occurred about once every nine years during the warmer 15th and 16th century, but only about once every fourteen years during the 17th century and up to the present—a cooler period known as "the Little Ice Age." With the greenhouse warming now in motion, Clark speculates that the blazes will become more frequent in the near future.

The climatic background for the last two summer's series of fires seems to support Clark's theory. As in the previous summer, record high temperatures swept the United States, most of them topping previous highs set during the searing hot Dust Bowl days of the '30s. From California to the Carolinas, from the Canadian prairies to the Texas plains, much of North America was beset by "The Big Dry." Millions of acres of parched farm and grazing land were blown away by strong winds. The drought also spelled massive soil erosion, crop failures, farm bankruptcies, high food costs, transportation disruption, tainted drinking water, and municipal water shortages. No wonder President Reagan himself conceded that the drought of '88 seemed worse than the Dust Bowl of five decades ago.

Forest fires are at once a symptom and a cause of our global climate crisis. The increasing frequency of forest fires will unleash huge amounts of CO₂ into the atmosphere, thus further promulgating the greenhouse drying and warming and increasing the rate of forest fires. This "positive feedback" relationship is predicted by a cybernetic conception of our planetary ecosystem vis à vis soil demineralization. Briefly, as soils lose minerals through natural "weathering" and the leaching effects of acid rain (nitrogen and sulfur compounds released from forest fires), they become more acidic, and thus coniferous forests

continued from page 5

If quick weed growth forces him to scythe before the weeds re-seed, he plants cover crops such as vetch or clover, mixing them with lettuce seed, for instance. When the lettuce is picked several months later, the cover crop is left to grow for a winter cover.

"Most farmers feel the way to control [soil] competition is to kill all the weeds, but the downside is a dead soil as well," says Cannard. "It's much easier merely to suppress the weeds, as long as their foliage is not crowding out the productive crop."

Rocks and weeds may not be every farmer's cup of tea, but they're something to think about. University of California Extension vegetable specialist Ron Voss comments, "We need to know what parts of Bob Cannard's [methods] are working and why, before we can really recommend them to others."

Reprinted with permission of California Farmer; copyright 1989 HBJ Farm Publications.

continued from previous page

tend to flourish. This favors the tendency toward more forest fires, as discussed earlier. (See Gregory Watson's 32-page paper, "Gaian Evolution and Global Climate Change", 1987.)

Forest fires also contribute to the glaciation process in a more blatant manner: smoke particles contribute to denser, darker cloud formation, which in turn shield out sunlight more effectively. Along these lines, according to one 1987 study ("You Only Choke Twice," *Discover*, 10/87, p. 6; also see: "Forest Fires Provide 'Nuclear Winter Model'; *Bellingham Herald* 10/17/87) the atmospheric conditions resulting from record forest fires in California and Oregon are as close to those resulting from nuclear warfare as one is likely to see. Researchers studying the smoke's effects confirmed the "nuclear winter" theory that massive smoke could block out sunlight long enough to wipe out crops and cause mass starvation. In addition, data from the fires will help shed more light on conditions such as acid rain, ozone loss and the greenhouse effect.

Given the greater vulnerability of fires under dry conditions, a deeper question arises: "Why the Big Dry?" Three hard-hitting droughts have already parched large portions of North America in this decade and sunspot predictions suggest a large risk for 1990. The reasons for drought are varied; some are quite tangible, others are as enigmatic as sunspots and the magnetic conditions of the planet. But this much is known with certainty: much of this dryness is linked with a general lack of vegetation and

Bread from Stone

The practice of using granite powder as a soil additive dates back at least to the late 19th century when a German chemist, Julius Hensel, wrote the book *Bread from Stones*. Hensel maintained that much of the earth's surface, which has been depleted of minerals by erosion and farming could be restored by the addition of granite powder—what he called the "primordial rock."

The views of one of Hensel's contemporaries, German chemist Justus Von Liebig, also were widespread at the time. Von Liebig identified three main plant requirements as NPK (nitrogen, potassium, and phosphorous). Give plants these three chemicals, and you've

supplied most of their nutrient requirements, he believed. Hensel, on the contrary, asserted that a broad, balanced spectrum of natural substances is required for healthy plant growth; these substances cannot be found in any man-made formula, he said.

He also discouraged using manure. Like NPK, he said, manure contains large amounts of nitrogen, which "act as an unnatural stimulant to plant growth."

The ideas of Von Liebig gained predominance, however, and as the NPK formulas are familiar to almost every commercial farmer, today Von Liebig is recognized as the father of modern chemical-fertilizer theory.

—Eric Gibson

plant vitality. Areas of the earth paved over by urban sprawl are generally hotter and drier than nearby forest or grassland areas. The reason is that plants, especially trees, give off far more water to the atmosphere than is retained for photosynthesis. The term "evapotranspiration" refers to the total amount of water that passes through a given biological system, including evaporation and moisture release from trees, grasses, and other plant-life during photosynthesis.

By natural design, photosynthesis takes place most efficiently when wet leaf-cell surfaces come in contact with the air for the exchange of carbon dioxide and oxygen. According to Peter Farb, this results in constant and tremendous water loss. "A tree requires about 55 pounds of water to form 100 pounds of cellulose, the main constituent of wood. Yet, while the tree is making the 100 pounds of wood, it loses in evaporation nearly 1,000 times that weight in water." (From: P. Farb et al., 1971, *The Forest*, Time-Life Books, p. 99.) The tremendous air-moisturizing potential of forests is, according to a study reported in the September 24, 1987 *Nature*, the single most important reason for the abundance of plant and animal species in some areas compared to others. Where there is high evapotranspiration, natural ecosystems are full of life. (Incidentally, the same study found that animal diversity is correlated with the amount of solar radiation, which, like evapotranspiration is a measure of energy available for growth.)

In the rolling farmlands of America, a paucity of trees feeds into the drying tendency already present in conventionally farmed soils. Trees provide shade and

keep the soil well-aerated with their roots. Agricultural chemicals (fertilizers, pesticides, and herbicides) tend to displace water and promote dehydration of the soil. The use of heavy farm equipment causes soil compaction, so that water tends to run off the top rather than into the ground. Modern agricultural methods are thus rendering modern farms especially prone to "Dust Bowl" tendencies. As soils dry out, erosion rates increase and valuable topsoil is lost by the ton.

The final dessicating blow comes from a negative feedback effect from the atmosphere. Moisture in the soils and produced by indigenous vegetation tends to cool the lower atmosphere. Much of the solar energy striking the planet is used up evaporating the water in the soil. But dried-out soil reradiates the incoming sunlight into the lower atmosphere, intensifying the heat and leading to even drier conditions. What's worse, in very dry areas, any rain that does fall evaporates before even reaching the earth. It is by this multifaceted process that the Sahara desert is advancing southward about one mile per year. Much of the North American continent may soon follow suit.

Forest fires will continue to play an integral part in Gaia's climatic agenda and may well be nature's "coup de grace" for our planetary transition to another Ice Age. Together with relentlessly increasing fossil fuel combustion, deforestation, and volcanic eruptions, the growing scourge of forest fires may soon spell unmitigated disaster to the survival of millions of plant and animal species, including our own.

The Climate Issue- A Summary by Larry Ephron

WE ARE ON THE EDGE OF STARVATION

Extreme climate changes threaten our survival We can avert a holocaust if we act fast

Three droughts in the 1980s, each worse than the last, have increasingly damaged our ability to grow food. The terrible heat and drought in the summer of 1988 destroyed almost a third of all the grain growing in the U.S., the basic staple food of our lives. For probably the first time in our history we were not able to grow enough grain to feed ourselves.

Lester Brown, director of the Worldwatch Institute, says that if there is another severe drought in 1989, America and other affluent countries will be faced with the choice of going hungry ourselves or condemning millions of people to starvation. Even if we were to hoard all our grain (and perhaps risk global, even nuclear war), two or three more severe droughts—extending the trend of the 1980s—could quickly wipe out all our reserves and bring us to the edge of starvation ourselves, within just a few years.

There is widespread scientific agreement that the spreading drought is caused by the greenhouse effect—the rapidly rising level of carbon dioxide and other gases in our atmosphere which trap additional heat from the sun. What is only gradually becoming recognized is that the greenhouse effect causes several extreme changes in the weather and climate, all of them already diminishing our ability to grow food.

THIS GREENHOUSE IS NOT ALWAYS WARM

Most observers assume the greenhouse effect will warm the earth's climate dramatically in the coming years. The four hottest years of the century were all in the 1980s, and the summer of 1988 was unbearable.

But surprisingly, winters have also been getting longer and colder for the past 50 to 100 years. Over and over again in the last fifteen years, Northern hemisphere winters been the coldest in recorded history, and record snow has fallen shockingly late in the season in many areas, sometimes even into June and July. What is going on?

The greenhouse effect is indeed occurring—but primarily in the tropics and lower latitudes, where there is a lot more of the sun's heat for the greenhouse gases to magnify. Since the polar regions get few of the sun's rays, the greenhouse

effect is minimal there. So the greenhouse effect is primarily heating up the tropics while the poles stay about the same.

Any meteorologist can tell you the consequences: the hotter tropical air rises faster and heavy, cold polar air rushes in to fill the vacuum. The earth's air masses circulate faster, resulting in higher winds. In fact there have been increasing numbers of hurricanes and tornadoes for half a century now, and 1988's Hurricane Gilbert was the strongest hurricane ever recorded in the Western hemisphere.

These greenhouse winds often carry a lot of moisture with them, evaporated from the now overheated tropical oceans. Carried in clouds to the higher latitudes, this moisture falls as increasing rain during the spring and fall, and as increasing snow and ice during the winter. Thus winters get longer and colder. Longer winters have reduced the growing season by almost a month in the American midwest in the last forty years. All these phenomena are well-documented in the scientific literature.

In the summer, the winds circulate more rapidly toward the opposite pole, which is now in winter cold. So most of the moisture-laden tropical clouds are blown away, leaving behind intense summer heat and drought to make our lives miserable and destroy our food crops.

All of these terrible consequences of the greenhouse effect—record heat, drought, high winds, longer winters, and increased spring flooding from the excess snowfall—destroy our ability to grow food. The drought is only the most extreme threat at this time. It began with the unprecedented 15-year drought in northern Africa that killed millions of people, and which seems to be recurring with only a brief pause. A severe drought in the southeast states of the U.S. in 1986 destroyed some 90% of the crops in that region. And now the ominous drought of 1988 shows us where we are headed.

The climate can be expected to become increasingly extreme and inhospitable in many ways as the greenhouse gases accumulate at an accelerating rate. We may look around and see sunny skies and supermarkets filled with food, and feel ourselves secure. In fact we may be virtually on the edge of an abyss.

THE ICE AGES

We now know that the major ice ages recur on a vast 100,000-year cycle—about 90,000 years cold, only about 10,000 years warm (with up to a couple of thousand years variation). Evidence of the past 25 of these cycles has recently been discovered in sea-floor and ice cores.

We are about 10,800 years into a warm period, one of the so-called interglacial periods. Everything we think of as human civilization—pottery, agriculture, writing, cities—has been created in that brief span of time since the last major ice age ended and the earth warmed up again.

What could cause such an awesome recurring cycle of ice ages? Up until recently, many scientists have believed that the major ice ages are caused by very small changes in the earth's orbit and rotation, which have minute effects on the amount of sunlight falling on various parts of the globe. Some of these orbital movements do seem to cause relatively minor fluctuations in ice cover on the earth. But the small variation in the earth's orbit around the sun, which very slightly narrows and widens on a hundred-thousand-year time-frame, produces changes in sunlight which are so minute—on the order of half of 1%—that many scientists, like Stephen Schneider, Director of Interdisciplinary Studies at the National Center for Atmospheric Research, now feel that this is too small to be the cause of the major ice ages.

This orbital theory assumes that something has to cool the earth to bring on an ice age. But Sir George Simpson, former head of Britain's Royal Meteorological Society, suggested fifty years ago, that, paradoxically, some source of increased energy would have to be found—energy that could be presumed to move the huge amounts of moisture from the oceans that builds up the glaciers during an ice age.

JOHN HAMAKER'S THEORY

Finally a scientist has come up with a plausible source of that energy. John Hamaker is a mechanical engineer trained at Purdue, who has been studying climate from a very multidisciplinary perspective for the past fifteen years. Hamaker believes the energy to build up the ice age glaciers comes from a greenhouse effect, which transfers tropical moisture to the higher latitudes during the winter.

But wait a minute—isn't the greenhouse effect caused by human activities? How could a greenhouse effect have been responsible for ice ages which occurred long before we humans ever existed?

Science has long known that a great deal of erosion, by wind and water, takes place during the 10,000 years of each warm inter-glacial period. One of the major consequences is that the minerals in the soil get substantially eroded away, or leached deep into the subsoil where they are no longer available to the trees and other plants.

We now know that close to a hundred minerals—iron, calcium, magnesium and many others—are essential nutrients for all plant, animal and human life. As the vital minerals in the soil get eroded away, the earth's forests get progressively weaker, and eventually begin to die back. They succumb more readily to insects, disease and forest fires, all of which increase.

As the forests die back they not only consume less carbon dioxide from the atmosphere, the huge amounts of carbon stored in them is released back to the atmosphere—where it recombines with oxygen to form large quantities of carbon dioxide. Since carbon dioxide traps more heat from the sun, this increase creates a naturally-occurring greenhouse effect, with all the severe climatic consequences we saw earlier.

This greenhouse effect continues for tens of thousands of years, transferring more and more moisture to the growing polar glaciers and creating an ice age. The tropics, paradoxically, are known to be hotter during an ice age, something which could never be explained before.

Why does an ice age ever come to an end? That's the last piece of this awesome puzzle. As the glaciers slowly advance over tens of thousands of years, they grind up the rocks in their path into a dust as fine as talcum powder. This dust is then carried by streams and blown by wind over many part of the earth.

Rocks are made up of minerals. So this rock dust **remineralizes** much of the earth's soil! It nourishes the forests again, and they become rejuvenated. As they thrive and spread, they consume the excess carbon dioxide in the atmosphere. The greenhouse engine eventually subsides, and another mild inter-glacial period, like the one we've been living in, is ushered in.

Every element of this complex theory is validated by current scientific knowledge, spread out in a number of different fields.

THE COMING ICE AGE

Pollen specialist Genevieve Woillard, studying deep undisturbed pollen beds

left by ancient trees, concluded that last time, the final shift from a warm inter-glacial climate to the beginning of the last ice age—when it became too cold for fruit and nut trees to grow—took "less than 20 years." Observing that European forest now seem to be dying in a similarly precipitous way, she wrote—in 1979—that we may already be well into a comparable period of rapid climatic change, and only a few years from the beginning of the next ice age.

This time around, we're accelerating the natural processes of climatic change by adding our own greenhouse effect: destroying the world's forests at an ever-increasing rate, burning the fossil remains of long-buried forests which have turned to coal, oil and natural gas, etc.

Hamaker agrees with Woillard's assessment of where we are in the current cycle. He believes with Worldwatch that we may be less than a year or two away from widespread hunger and starvation. And that if we do not act in time, the majority of people on earth, in every region, will soon starve to death, probably in less than a decade.

WHAT CAN WE DO?

If Hamaker's theory is correct, however, and if we act quickly, we may have it within our power not only to slow down the deterioration of our climate but to stop the cycle of ice ages completely.

How? By doing four simple but monumental things very fast: (1) Stop the clearcutting/burning of the world's forests, especially the fast-growing tropical rainforests which contain so much carbon. (2) Plant vast quantities of new, fast-growing species of trees to quickly begin consuming the excess carbon dioxide. (3) Take over the glaciers' job and remineralize much of the earth ourselves, simply by grinding up mixed gravel and spreading it over the forests to rejuvenate them. And (4), take a two- or three-year vacation from our energy-guzzling way of life—until enough of the new trees come in and existing forests can be revived. These things will reduce the greenhouse gases enough to move us back from the brink of oblivion, and give us the time to create a less polluting, less suicidal way of life, based partly on liquid and gaseous fuels (methanol and methane) from newly planted trees.

We can also quickly remineralize our farmlands to increase yields dramatically (on the order of 300-400%, based on existing research!)—before drought and other climatic threats wipe out all our meager food reserves and much of our ability to grow food. Remineralizing our agricultural soils will also us to stop using chemical nitrogen fertilizers,

which are adding to the greenhouse effect, and toxic pesticides which are poisoning the earth and contaminating our food.

But we may have to act very quickly to have any chance of succeeding. The climate system may very soon reach a point-of-no-return, when various feedback loops (drought kills forests which increases drought, etc.) take the deterioration completely beyond any human capacity to reverse it. At such a point the earth would be committed to the 90,000 years of the next ice age. It is quite possible that we are less than a year or two from such a point.

Unfortunately, it probably won't be easy to get such massive things accomplished, even with the threat to our survival. There are enormous vested interests making huge profits from the current way of doing things.

But it may not be hopeless. "Debt-for-nature" swaps have recently been made in which rainforest countries agree to protect large preserves of forest in exchange for reduction of their national debt: the banks agree to discount the loans greatly (85% or more), and foundations have put up the money. On this model we might be able to save most of the remaining rainforests for less than \$100 million, quickly raising the money from rock concerts, for example. The Live-Aid concert for drought victims in north Africa raised \$82 million in one weekend. We can buy some time this way.

But the world's governments are going to have to finance and organize most of what needs to be done, and they're probably not going to acknowledge the need and do it in time unless there's a mass movement to demand that they do. It may take a movement as big and determined as that which stopped the Vietnam War, and we may have very little time to organize it.

It would seem we need to put aside everything in our lives that isn't absolutely essential now, and get on with what is—our survival.

Larry Ephron, PhD, is author of *The End* (Celestial Arts, 1988) and director of *People for a Future*.

The End: The Imminent Ice Age and How We Can Stop It, \$8.95, and the video "Stopping the Coming Ice Age," \$19.95 are available from People for a Future, 2000 Center Street, Berkeley CA 94704. 1-800-441-7707. In California: (415) 524-2700.

Copyright 1988, Larry Ephron
May be published at standard rates,
and xeroxed freely.

A Warming? No! Just Glaciation and Starvation

by John Hamaker

There exists a fatal lack of understanding of the climate system. As a result none of the things are being done that ought to be done in response to the climate change. Perhaps a new perspective will clear up our confusion.

All living organisms are a part of a dynamic process of cycling the gases and minerals which are in combined form in the rocks of the earth's mantle and in the ocean floor. The gases and minerals are separated by heat and pressure in the part of the tectonic system where the energy is released to run the system. Those minerals from which the gases have been extracted are ejected into the mountains, and the gases are ejected into the atmosphere. The living organisms recombine the gases and minerals into the crustal rocks of the ocean floor which is then reprocessed in the energy zone.

As long as a natural balance exists between the gases in the air and the minerals available to the life system, the climate remains constant. The life system has a range of flexibility in its use of the gases and minerals and thus can maintain the cycling. Any major change in the balance or quantity of gases or minerals induces a climate change which restores a balance so the cycling can continue. The life system itself can expand or contract and even change genetically as required to maintain the cycling.

There are changes constantly taking place which upset the balance and the quantities of gases and minerals. An agricultural and technically competent society has the potential to control the balance of gases and minerals. We can do it if we can effect a major philosophical change in our attitude toward man and nature.

The abundance of living organisms on the land and in the water at any one time depends on the abundance of gases in the air and minerals available on the land and in the water.

The microorganisms combine the gases and minerals to make the organic compounds of life within their cell walls. The plant life extracts the life compounds from the microorganisms and adds the energy compounds of photosynthesis so that all the other life forms can have the life compounds and energy supply to function.

The residue from all life processes on the land erodes into the ocean. The microorganisms in the ocean use what

they can along with minerals in the ocean and gases in the air to support the ocean chain of life. The various forms of ocean life convert the gases and minerals to solid substances which come to rest on the sea floor to form the sedimentary layers. The tectonic system completes the cycling of the elements.

The tectonic system is a hydraulic system. Its energy is derived from critical mass explosions in "hot spots" at about 400 miles below the surface. The hot spots are columns of superheated melt in massive chimneys such as those in which the diamond mines of South Africa are located. The tops of the hot spots are joined by a river of superheated molten rock at the level of the incoming ocean floor. The face of the incoming ocean floor is melted off at a rate of a few centimeters per year. Above each "hot spot" are the tallest mountains. The mountains grow as the hot spots mature to full strength. The mountains take the full force of the explosions and disperse the hydraulic impact throughout the system joined by the river of melt. Behind the hot spots is a section of ocean floor which is being or already has been raised to plateau status to become part of a continent. All of the hot spots in front of the plateau are called continental heaters.

Most of the superheated melt is recycled to the ridges in channels located in a hot zone 200 miles below the surface. Some of the superheated melt moves upward through the sintered mass of high melting point compounds that constitutes the earth's mantle. The melt oozing upward supplies heat and melt to the melted zone between the crust and the mantle. The ocean floor requires a large flow of melt to seal the innumerable cracks that occur when the floor is forced to flow to the heaters by the push from the ridges. The ridges alternately rise and fall due to fluctuations in pressure of the melt beneath them. This action results in a toggle effect which forces the two halves apart as melt rises in the crack between them. Flow to the continents is minimal because the continents are sealed against loss by old ocean floor slabs wedged under the edges of the continent and backed up by ocean floor sediments extending over 100 miles out to sea. The sediments, eroded from the mantle, probably contain unused radioactive components which separate by gravity to accumulate a critical mass. The explosions provide

the energy to run the tectonic system. A small amount of sediments are fed into the hot spots with each movement of the sea floor into the heaters. Thus the mantle provides the continents with the molten rock to support a constantly increasing amount of land mass in proportion to sea floor. At some point the combination of use and decay of radioactive materials will not supply sufficient energy to meet the growing demand for energy. When that happens, the Earth, like Mars, will become a dead planet.

With this knowledge of how the inanimate minerals and gases are cycled and recycled we can understand the present climate changes.

The climate in the last half billion years has been predominantly hot occasionally interrupted by short periods of glacial weather. The hot periods are characterized by hot steamy weather, copious rainfall, and jungle-type vegetation in great abundance. Cataclysmic explosive events fill the atmosphere with greenhouse gases, dust from the ridge's crust, and dust from lava.

The explosions are caused when a continent splits apart or when a ridge is forced to move under a continent. The ridge, only 2 to 5 miles thick, stands above the ocean floor on a river of lava which feeds the crack between the two halves of the ridge. With the land side of the ridge held by the continent while hydraulic pressure under the ridge is fluctuating, it is inevitable that the ridge's plate will fail and molten rock will flow out to meet cold sea water. The explosions that occur are similar to the volcanic island explosions of recent history which have occurred behind the Java continental heater. The explosions continue until the rate of flow in that area decreases enough to permit the water to freeze the opening. It is a weak seal and a rise in pressure plus ocean floor motion break the seal and start a new round of explosions. These sporadic explosions continue until the ridge is destroyed over a period of millions of years.

Sometimes the explosions manage to penetrate to a heater. When that occurs, mountains are blown away exposing hot spots to atmospheric pressure and influx of water. The contents of the hot spot chimney are then blown out by the nuclear explosive force. It is not surprising that such things as uranium and iridium are scattered over the western United States. Where the 100-mile wide Gulf of California is located, there once

were mountains connecting with the Sierra Nevada mountains and Western Sierra Madres of Mexico.

More often than not two or more catastrophic events occur at the same time. In the last 65 million years the breakup of the old Pacific Ridge on the shores of the Americas occurred at about the same time as the explosive event offshore from India which resulted in an extensive lava flow. There may have been other catastrophic events. Such events require an expenditure of the melt between the crust and the mantle causing the land masses and ocean floors to sink a matter of several hundred feet. Large areas of the land masses become shallow inland seas.

The breakup of Pangaea about 225 million years ago set off a string of catastrophic events that put so much dust and greenhouse gases in the air that the lush growth spread to the upper latitudes, and the heat and quantity of clouds were such that the precipitation fell as rain instead of snow. The ice was washed away and warm conditions existed above the Arctic Circle. The skull of a dinosaur was recently found there as well as the remains of a massive tree growth.

Catastrophic events eventually end. At the end of the Cretaceous Period about 67 million years ago the dinosaurs began dying out. As the dust and gases were used up, food became scarce and it changed from a jungle growth to a more temperate growth followed by desertification in the parts of the earth where solar energy accelerated the growth to use up the minerals. The dinosaurs moved north to find food. But the inevitable end of their daily food requirements came when the greenhouse gases dropped to the point where snow fell in the upper latitudes and winter killed the vegetation. Had the catastrophic events of 65 million years ago occurred a little earlier, the hot climate would have been renewed along with the minerals and gases to support a sufficient microorganism growth to furnish the life compounds for the dinosaurs.

The catastrophic events of the last 225,000,000 years have run their course. The greenhouse gases can no longer sustain a hot climate. About 3,000,000 years ago the polar ice accumulated. The approximate 100,000-year glacial cycle began. It takes 90,000 years of glaciation to remineralize the world's soils and 10,000 years to demineralize the soils during the interglacial. We are at the end of the interglacial.

The microorganisms are the ones who granulate the soil to aerate it for easy entrance of air and water. The depth of the aerated topsoil is the measure of the quantity and quality of the

microorganisms and the life compounds which they supply to the plant life. Our topsoils are now only inches deep. They ought to be measured in feet.

The entire world is suffering from malnutrition. Many species, both plant and animal, are dying out. Trees are starving to death. Others are burning in epidemic fashion because the thin topsoils can not hold enough water for a few weeks of drought to supply enough moisture to the trees to make them fire resistant. People are dying from the diseases of malnutrition because there is not enough of the daily supply of life compounds to support immune systems. Brains that do not function for lack of the life compounds result in a 25% illiteracy rate. The malnutrition is compounded by genetic corruption from the nonbiodegradable synthetic organic compounds and radioactive materials. Our children are saturated with these compounds and deprived nutritionally from conception. We elders put these stresses on our young people, and when they turn to alcohol and dope for momentary relief, all we can think of to do is tell people to "say no" and institute a "war on drug pushers." Is the adult brain and conscience so dead that we can not deal with the basic problems? Are we so enslaved by the institutions of greed which have destroyed and contaminated the earth that we can only wait like animals for disease and famine to destroy us?

One way or another nature is going to keep on recycling the minerals and gases as long as there is enough energy released in the continental heaters to energize the system. The life on the land and in the water does not control the cycling. It is a part of the system. During the interglacial, the residual mineral supply supports the life on the land. In the ocean the life is supported by runoff from the land plus the minerals ground in the polar regions and those released by the excavation of the ocean trenches in front of every heater. The combination of mineral supplies is sufficient to hold the gases in balance at an indicated 270 – 280 ppm CO₂. When the supply of minerals left by glaciation runs out, the life system can no longer hold in check the gases emitted by the tectonic system. The gases increase in the atmosphere setting in motion the factors which cause glacial advance. We are watching it happen.

There is no such thing as a "warming." Those who predicted a warming did so in spite of the fact that the record shows that glaciation has in the past been initiated by a rise in CO₂. The CO₂ is a part of the glacial process. There is no evidence that those involved in the publicized climate study have any knowledge of the life system's role in

maintaining the cycling of the gases and minerals or knowledge of how the tectonic system works. The life system is a matter for biologists—especially those who since the mid '70s have studied such things as what happens at the interface between the root and the soil. The tectonic system is a thermomechanical system which is best understood by mechanical engineers. The life system has been ignored and geologists have been working on the tectonic system without checking their assumptions with engineers.

The recently issued preliminary draft EPA report to Congress on "Policy Options for Stabilizing Global Climate" is based on "the warming." It should have been based on the present and fast growing food crisis threatening the survival of civilization. The EPA is unaware of the fact that there is a crisis, otherwise they would not have offered the palliatives it proposes to send to the Congress.

DO WE HAVE A CRISIS?

1. For lack of minerals in the soil the soil organisms are dying out. Without them no other life can exist on earth. We are in a period of extinction or near extinction of all species of life. The thin topsoils and the low mineral content of foods testify to the disappearance of the soil organisms.

2. Every factor which raises the world albedo is now increasing at an accelerating rate. As a result the permanent snow cover in the upper latitudes is steadily advancing toward the middle latitudes and growing seasons are shortening. Glaciation has begun.

3. The violence of weather caused by the cold air running into the warm air is taking a heavy toll on crop production. The violence can only accelerate as greenhouse gases increase and the glaciation continues.

4. The environment is saturated with non-biodegradable synthetic organic compounds and radioactive nuclear contaminants. They kill or cause mutations in all living cells. Since they can not be biologically degraded, they will be with us for a very long time. How much they will damage an effort to effect our survival no one can say.

5. At a time when all nations suffer from diseases of malnutrition and some from famine, none have reduced their population growth to zero or a negative rate. If the mind can not overrule emotion, then we must watch each other die—and soon.

6. The world's economic laws have been established by the rich and for the rich. As a result the "rich get richer and the poor get poorer." Eventually the dispossessed must revolt and demand a redistribution. Nations at war can not

LAST CHANC

The Newsletter of People For A Future
Trying to stabilize our climate before it's too late

Number 1, April 1989

Last Chance is a recent newsletter addition to the network being published by Larry Ephron and **People For A Future**.

The newsletter includes sections on **The Good News**, recent breakthroughs and **The Bad News**, continuing setbacks in getting the climate issue out to the public. It also has sections on **Grassroots Organizing: What You Can Do**, a column on **The Will To Live**, and **What We Need Money For**. The page with **An Update on Remineralization** and **Some Key Networkers** is reprinted here on the following page. Every possibility for getting the word out is encouraged and **SR** welcomes **Last Chance** as a new networking tool to go along with the documentary video and film **Stopping The Coming Ice Age** and the book **The End**.

carry on a survival program. All of the law must be changed to bring the people of a nation together as a cohesive unit with the common objective of survival.

7. Finally there is the matter of the point of no return. It is conceivable that a massive survival effort could transfer most of the greenhouse gases from the atmosphere to the soil, trees, and inland coastal waters in three or four decades. This would reduce the cloud cover and slow the rate of precipitation and hence the glacial advance. However if the permanent snow cover is so large that the cold air descending over the land masses is sufficient to maintain the glacial circulation of air, the glaciation will continue. After the last glaciation the CO₂ level stood at 250 ppm, thanks to the growth of microorganisms in generously remineralized soil and water. The tectonic activity was minimal after the glaciers stopped growing because the glaciers were melting in the middle latitudes from the effect of a hot sun in clear skies and from minimal snowfall. With very little greenhouse gas temperature differential which has now initiated glaciation did not then exist. A few decades from now the sea and the land will have cooled very little. If the permanent snow field maintains the glacial circulation of

air, the lower latitudes will be dry and hot. Forests can not grow on deserts. So we do not have the ideal conditions for glacial collapse which existed after the last glaciation. What it boils down to is a race against the growing permanent snow cover.

Due to procrastination we find ourselves playing a game of Russian roulette in which the "six gun" is loaded with about three bullets instead of one.

These problems constitute a crisis. The leisurely pace proposed by the EPA study, which is typical of the views of the Congress and its scientists, is totally worthless as a response to the crisis. EPA does not understand the role of the soil and water microorganisms in the cycling of gases and minerals. They assume that stopping the use of fossil fuels, converting to other forms of energy, and planting forests is all it takes to stop the climate change. The truth is that trees will keep on dying and burning faster than we can plant new seedlings which will not grow on soils lacking in microorganisms. The gases now in the air must be removed and put into the only sinks available: topsoils, standing timber, and inland and coastal waters. Only the microorganisms can do the job. We must remineralize the soils and waters

Available from People For A Future:

# Copies	Totals
— <i>The End: The imminent ice age and how we can stop it</i> (paperback)	\$ 8.95
— <i>Stopping the Coming Ice Age</i>	19.95
Please specify: <input type="checkbox"/> VHS <input type="checkbox"/> Beta	
— "Will we have to stop eating soon?", 1-hr. audio-cassette from KPFK	6.00
— 14x23" New York Times Poster, "We Are Close to Starvation"	1.00
— 8-1/2x14" Poster for film showings	1.00
— Same film poster 10-1/2x17"	2.00
— Extra copies of <i>Last Chance</i>	2.00
Sub-total:	
Tax (Calif.)	
— Tax-deductible membership/year	\$ 15.00
Total:	

I would like to make a tax-deductible contribution of \$25 , \$50 , \$100 , \$500 , Other \$ _____ to support the urgent work of People For A Future.

Please add \$2 postage/handling for each \$40 of your total order (not counting memberships); or \$3 per book or film for first-class mail. Quantity discounts are available on all items.

Name _____

Address _____ Zip _____

Phone (____) _____

People For A Future
2000 Center Street
Berkeley CA 94704

For credit-card orders call
toll-free 1-800-441-7707;
California (415) 524-2700
Visa/MasterCard accepted

so the microorganisms can multiply. We must start the remineralization immediately using whatever is available until we can build an entire remineralization industry. The EPA preliminary report does not even mention this most basic of all actions which must be taken.

Note:

This synopsis has been drawn from "The Survival of Civilization," Hamaker and Weaver, April 1982, and the "Comment" papers in Don Weaver's updating bulletins, Numbers one to ten. The synopsis has been prepared to draw attention to the two neglected factors which, when understood, make it easy to understand the long term climate. It also makes clear the urgent need for action if we are to have a chance to effect our survival.

All who receive a copy of this paper are urged to make and distribute copies.

John D. Hamaker
Route 1, Box 158
Seymour, MO 65746

Update on Remineralization

A growing number of people around the country are scouting out local sources of gravel dust (gravel pits, asphalt and concrete plants, glacial deposits, etc.) and doing pot tests with quick-growing radish seeds to see if it makes a substantial difference. We will be a clearinghouse for this information. If you have made significant finds of gravel dust that appears to work well, or available rock grinders, please send us the details and we will include it in future newsletters.

Unable to find local sources of gravel dust himself, John Hamaker has recently used a product called Clodbuster with good results — it got his crops through the inferno of summer '88. It's lignite, a soft coal, which apparently contains a lot of minerals in its highly compressed organic matter (not as much as gravel dust, however). It's available from Agronics, Inc., 701 Madison NE, Albuquerque NM 87110. (505) 298-1748. (A gypsiferous shale product from U.S. Soils in Salida, Colorado, however, does not seem adequate for our purposes; their specs show a very small increase in growth rate, and John believes it's imbalanced and could imbalance the soil.)

We have recently heard of a manufacturer who makes grinders that can turn out on the order of 4-500 tons of very fine (600 mesh) rock dust a day. They're available for lease only, at \$3500/month. If you find a large source of mixed glacial, river or ocean gravel that checks out with a pot test, and are ready to go into business, contact Gary Scott at (801) 358-6404 (Salt Lake City).

And we have just made contact with Calico Rock in Barstow, California. They have 50,000 tons of waste rock dust, a variety of single rock types that can probably be combined to approximate the full spectrum of minerals. They're doing some research on it now. If it checks out, they'll sell it for \$15/ton. Since they have a contract to supply Santa Fe RR's ballast rock, they get a special rate for their own shipments. So they can deliver to California and adjacent states for about \$10/ton, the midwest for about \$20/ton, and the east coast for about \$40/ton. Farmers can then truck the dust from the freight cars. They will have fine-grinding capability in 4-5 months, sooner if there's a large market for rock dust for remineralization, and have river gravel nearby. Call Cort Hooper at (714) 699-6444. (Compare even \$55/ton, 10 tons/acre = total cost of \$550/acre once every ten years, with the cost of chemical NPK fertilizer, about \$115/acre one to three times a year, for a total cost of \$1,150 to \$3,450 in ten years. And gravel dust will produce twice or three times the yield, if there is enough organic matter in the soil.)

In the Southeast you can try Ron Browning-Nash for grinding equipment (we haven't talked to him yet); (703) 920-1123. And Joy Wilton-Hill (see Networkers, below) is working with a geologist at Australia's New England University to locate grinding equipment and do a demonstration project.

An interested San Francisco machine shop estimates they could produce a medium-small prototype (1 ton/hour) of John's "rocker box" grinder for about \$10,000, and that in quantity they would be significantly cheaper. They say they would build it on a trailer so it could be moved easily, and so grinding could be done right on local sites. We are checking out information on other existing grinders in various industries, and

will keep you informed.

Doing a pot test (see *The End*, p.77, last paragraph) is the simplest way to find out if a source of rock dust increases plants' growth-rate substantially. If you can afford it, laboratory analyses may also be useful. You can compare the mineral content of samples with an Encyclopedia Britannica table of the elements in igneous rocks, reprinted in the latest issue of *Soil Remineralization* (see Other Publications, below).

If you find an effective source of gravel dust, please do some controlled experiments, planting plots with and without the dust right next to each other, so they can be included in one photo. You might also plant adjacent plots with increasing quantities of dust. Take pictures from almost ground level if necessary to show significant differences. Send us good black-and-white copies of those photos, or original slides, so we can publicize them. Such pictures (and we do not have a single one!) can be the most persuasive argument for remineralization. (If anybody has the old issue of *Acres USA* with the article of John's that has a picture of a garden where only one end of the rows has been visibly remineralized, please loan it to us.)

Some Key Networkers

We'd like to print a list of everyone who has bought multiple copies of the film or book, and their phone number, to help facilitate local networks. If you'd rather not be on such a list, please let us know. Here are some of the most active people so far. You can contact them to help organize film showings, set up tables at relevant gatherings, educate and lobby local media, organizations and businesses, stage media events, etc.

Alaska: Fred Pankratz 907/376-7476 Arizona: Nathan Boles 602/282-6310 Arkansas: Greg Stout 501/253-7350 California: Roger Kahane 415/661-9008 Sam Ready 415/484-5497 Yvonne Rado 415/794-8698 Toni Denning & John Kent, Earth-Save Foundation 408/423-1233 Mark Fields, Esalen 408/667-3000 Gretchen Wyler 818/906-0405 Linda Krausen 213/257-5804 Mike Feinstein, Westside Greens 213/392-8450 Bob Weinberg 714/474-8200 Barbara Leigh 904/767-1284 Colorado: Bruce Rogers 303/499-2978 John Steiner 303/443-1202 Hawaii: Ed Dedeo 808/822-5907

Massachusetts: Anne Caputi 617/244-2443 Griswold (Gooz) Draz, Zoe Gallery 617/536-6800 Joanna Campe 413/586-8429 Michigan: Debby Vuckovich 313/828-4179 New Jersey: Tom Harkin 201/272-1310 Miriam MacGillis 201/362-6735 New Mexico: Debbie Disc 505/257-2890 Linda Speier 505/983-4429 New York: John Zielinski 212/633-8426 Stuart Sandberg 914/946-1019 North Carolina: Carolyn Deal 919/854-5132 Sharon Harmon 919/942-6041 Pennsylvania: Lucille Balukjian 215/647-9507 Washington, D.C.: Bill Holmberg 202/872-3835

London: Princess Helena Moutafian 01/435-2104 Scotland: Findhorn Foundation 0309/30110 Australia: Vern Lawrence, Melbourne 03/818-4512 Joseph Fisher, SA 011-6186/632-563 Joy Wilton-Hill, write 'Aberfoyle' Via Armidale, NSW 2350 New Zealand: Rob Bishop 58/28503

Cloud-Hidden Secrets

Unveiling the Coming Ice Age

by Mark Nathaniel Mead

"Not since 'the flat earth theory' has so baseless and fallacious a theory as the 'warming' been propagandized as science. The news media picked up the propaganda and presented it without question, just as they present advertising whether the claims are true or not as long as it is paid for."

— John D. Hamaker, 1986

Mechanical Engineer, Coauthor of The Survival of Civilization

"The accuracy of a climate model . . . can never be proved conclusively; it can only be verified by circumstantial evidence, such as the model's ability to simulate past climates or the seasonal cycle. . . . At present we are altering our climate faster than we can understand the resulting climate changes. If the trend does not stop, we shall eventually either verify or disprove the climate models—by means of a real, global experiment whose consequences we shall not escape."

— Dr. Stephen Schneider, May 1987

"Climate Modeling," Scientific American

Many scientists seem convinced that increasing amounts of CO₂ and other greenhouse gases will eventually warm the Earth, but they are equally certain that today's computer models simulations—the very data-generating gizmos upon which their predictions are based—are still far too sketchy to grasp the true magnitude of the problem. Models are always less than reality. And when such constructs are meshed with actual observations of ocean-to-atmosphere dynamics, any talk of a pronounced warming trend suddenly seems all but ludicrous. At the heart of this perplexing situation lies a single well-known phenomenon: clouds.

Satellite photography shows that clouds, on any given day, cover about half of our planet. Besides quenching Earth's biological thirst from time to time, clouds help cool the planet by reflecting sunlight back to space. In effect, they block much incoming sunlight from reaching and warming the Earth. That's why cloudy days are invariably cooler than sunny days during the same general time of the year.

But the picture becomes fuzzier when clouds are viewed from the ground up. In the so-called greenhouse effect, much of the sun's shortwave radiation reaches Earth's surface and is emitted upward as longwave infrared radiation (heat or

thermal energy). Some of this upward energy, however, is blocked by clouds and sent back to Earth, while the rest passes through the cloud tops to space. By trapping in some of the heat emitted by Earth's surface, clouds can have a greenhouse effect that tends to counteract the cooling effect of their reflectivity. And that's why cloudy nights are invariably warmer than clear nights during the same general time of the year.

Thus clouds play a dual role in regulating the atmosphere, at once cooling and warming. Scientists seem hard put to agree on which effect will dominate as the climatic balance changes. Up until this year, clouds have been viewed as merely irksome greenhouse anomalies, fleeting phenomena with some peculiar quirks such as albedo (reflective capacity) and mobility. But if, indeed, atmospheric CO₂ continues to rise as projected, those same quirks may turn out to be climate-altering forces of colossal proportion.

Research supporting the cloud-albedo connection dates back to 1964, when Drs. Manabe and Strickler showed convincingly that all layers of the troposphere (Earth's atmosphere) are emitting more radiation than they are absorbing (*Journal of Atmospheric Science*, 21: 361). The issue received only minor attention until an article by James A. Coakley of the National Center of Atmospheric Research appeared in *Science* on August 28, 1987. Coakley's satellite images of the tracks of ship exhaust indicated that aerosol pollution could make clouds denser, thereby reflecting more sunlight. In an aerosol-contaminated cloud, or in large masses of clouds, said Coakley, the cooling properties of clouds were dramatically increased.

In the September 24, 1987 issue of *Nature*, Timothy Bates and colleagues of the National Oceanic and Atmospheric Administration proposed that phytoplankton in the ocean could cool the planet by producing dimethylsulphide (DMS), a major oceanic source of aerosol particles. Like the aerosols of man-made pollution, the condensation nuclei of sulphate aerosols raise the cooling-albedo of clouds. Elevated CO₂ would tend to boost photosynthetic activity, hence propagating more plankton and raising aerosol production. A 30 percent increase in condensation nuclei would cool the globe at the surface by a stupendous 1.3 kelvins. During the last Ice Age, when mile-thick ice blanketed much of North America and Europe, the world was only 4 kelvins colder than it is today.

Another compelling study was published in the September 10, 1987 issue of *Nature* by four German scientists of the Max-Planck Meteorological Institute and the Meteorological Institute of the University of Hamburg. The researchers provided elaborate calculations indicating that all previous models of the greenhouse effect were in error. They concluded that the "negative feedback" effect of increasing cloud cover (albedo) in the atmosphere would supersede the greenhouse warming. *Nature's* summary: "With increasing CO₂ concentrations the cooling effects of cloud optical properties will dominate over the greenhouse effect."

More recently, in the January 6, 1989 issue of *Science*, a research team led by V. Ramanathan of the University of Chicago's Department of Geophysical Sciences presented a preliminary report on cloud observations by two satellites in the Earth Radiation Budget Experiment (ERBE). Clouds, they found, exert a major cooling influence on the globe: an impressive 13.2 watts per square meter, i.e., that much potential heat is barred from the global greenhouse. For comparison, computer models predict that a mere 4 watts per square meter in heating from a doubling in CO₂ should eventually warm the globe by 3° C or more (and that would be a huge rise in temperature; by contrast, last year, NASA scientists said a rise of only 0.8° C had occurred over the last 100 years.)

The cooling effect of clouds is not uniform throughout the globe. Over the tropics, according to the ERBE data, the heating and cooling effects of clouds almost balance out, while over the middle and northern latitudes, the cooling power of clouds clearly dominates. This makes sense, since clouds over the cooler areas of the Earth would tend to be more of the denser, cumulus type, while clouds over the tropics are of the more opaque, cirrus variety.

Despite the seemingly grand import of ERBE's preliminary findings, no definitive conclusions could be made. First, the satellite sensors only examined one 35-square-kilometer patch of ground at a single instant, giving a rather piecemeal view of the globe. Second, the researchers used only one month of measurements (April '85) and some incomplete data from three other months in '85 and '86. Had they studied cloud changes over a longer period, the results could have been quite different.

continued on page 23



World Constitution and Parliament Association

ORGANIZING AGENT FOR THE PROVISIONAL WORLD PARLIAMENT

1480 Hoyt St., Suite 31 / Lakewood, Colo. 80215, USA / Ph. 303-233-3548

To Individuals and Organizations
Concerned with the Climate Crisis

Dear Residents of Planet Earth:

Since our first letter of 14 March, 1989, sent together with the booklet on Climate Crisis, we want to report that organization of the **Emergency Earth Rescue Administration** will go ahead as planned during a meeting on July 21 and 22 at the Sheraton Washington Hotel, in the Baltimore-Annapolis Room, 2660 Woodley Road, N.W., Washington, D. C.

Replies for participation are coming in from many parts of Earth. All who want to effectively cope with climate change are invited.

Perhaps some who received our previous letter may have thought the climate crisis was global warming, due to the great amount of publicity given to the warming thesis. To be sure, warming is part of the picture, particularly at lower latitudes. But cooling is the other half of the picture, particularly at higher latitudes. This is the "differential greenhouse effect," and corresponds to what is actually happening.

To base either an analysis or strategy on averaging warmer lower latitude temperatures with cooler higher latitude temperatures is neither scientific nor helpful in any way. The changing extremes in temperature are what is producing the climate crisis. Instead of a long period of supposedly gradual increase in global warmth, humanity is confronted with an immediate and rapidly developing crisis of extreme proportions. Both the heat and drought at lower and temperate latitudes, and the cold and snow and shorter growing seasons at higher latitudes, work together with other climatic abnormalities to assure universal agricultural crop failures. This quickly puts the lives of five billion people, or more, at risk through starvation.

Perhaps it would be possible for civilization to adjust over a hundred years to rising sea levels, so that we could keep on using oil and fossil fuels for energy. But the seas are more likely to recede

because the water being evaporated from the oceans at lower latitudes is already getting stored in more snow and ice at higher latitudes. Instead of rising seas, the reality of the climate crisis is the looming starvation of hundreds of millions and billions of people in the near future: Civilization will not be able to accommodate or adjust to that kind of catastrophe.

The introduction of energy efficiencies while continuing to use oil and gas coal, will not save us. There is, in fact, nor room for the continued use of fossil fuels for energy if we want to escape the onset of the next glacial period of upwards of 90,000 years. Instead, a global crash program to make the transition to solar, hydrogen, and other environmentally safe energy sources, must be completed before the end of the 20th century or shortly thereafter.

Reforestation, by itself, will not save us, either, no matter how many trees are planted. Why? Because most of the trees will not grow in a healthy manner, able to recapture the massive global campaign to remineralize all forest lands and all crop lands. Otherwise, reforestation will fail, because during the present inter-glacial period which has lasted more than 10,000 years, the soils of the world have lost their mineral vitality, and the industrial folly of acid rain, etc., is quickly finishing the job of making forest growth minimal.

In our previous letter of 14 March, we defined the kind of global program of action which is required to restore climatic balance, and to sustain the conditions of our benign inter-glacial period into the indefinite future. It is a program of applied human intelligence, based on a true understanding of geophysical processes and the results of human activities.

In our previous letter, we also emphasized that to carry out this program of action requires the rapid establishment of world federation and world government. This is necessary for several inter-related reasons: The climate crisis is a global crisis, and requires a globally coordinated program of action, impossible to implement on the basis of hundreds or

thousands of random local activities, even though all are valuable when made part of a well-coordinated global program. Effective action also requires the subordination of national sovereignties to a comprehensive global administration with authority to implement, as illustrated by the rain-forest situation and the fact that carbon dioxide emissions and acid rain do not respect national boundaries. The scale of the program is far beyond the capability of any group or nation, requiring the expenditure of a trillion dollars a year for the next 20 years or more. Finally, new global economic policies are also required, which can facilitate development of alternatives to cutting down rain forests, and expedite a hundred other environmentally sound strategies for development to serve human needs equitably. None of this can be carried out effectively while trying to cope with the intransigencies and myopia of a hundred and fifty national sovereignties, each insisting on the priorities of national military insecurity, diplomatic protocol, and other obsolete rituals and roadblocks of national sovereignty.

While recognizing the indispensable necessity for a federal world government to complete the work, we will endeavor to take the first steps to begin the **Emergency Earth Rescue Administration** at the meeting on July 21 and 22 in Washington, DC. Subsequent meetings will be held at the time of an International Environmental Conference at Goa, India, October 3 to 7, 1989; in Africa (Nigeria) during December; and elsewhere. Those wanting to help are invited.

A preview meeting of those desiring to assist in this line of action will be held during the time of the **World Balance** conference at Snowmass, Colorado, from June 2 to 5, 1989. If you are coming to this conference, please look for Philip and Margaret Isely, who will be there, and we will meet at times to be announced during the conference. For quick information on the important **World Balance** conference at Snowmass, call (303) 920-3202.

Philip Isely

Gravel and Rock Dust Sources

U.S.A.

Boddy Toddy
Health Mineral
Supplement
Rockland Corporation
Tulsa, OK 74128
(918) 437-7310
(800) 331-3659

Brookside Farms Lab
for mineral analysis only
Director Mark Flock
308 S Main St
New Knoxville, OH 45871

Calico Rock
Cort Hooper
Barstow, California
(714) 699-6444

Clodbuster- Fertimax
Leland Taylor
701 Madison St N.E.
Albuquerque, NM 87110
Reported on in SR #11-12
and recommended by Hamaker. It is lignite, a soft coal, which contains minerals in highly compressed organic matter.

Tom Davenport
5764-F Paradise Drive
Corte Madera, CA 94925
A source for Greywacke, Clodbuster and U. S. Soil products.

Dr. Soils Glacial
Box 891
Captain Cook, HI 96704

Ele-M-ite
Kelly Park
8790 Blue Jay Lane
Salt Lake City, UT 84121
(801) 262 6279
for agriculture and health supplement

Flora-Stim
Strite's Warehouse
P.O. Box 128
Greencastle, PA 17225
(717) 597-3325

A natural clay, rather than hard silicate gravel dust, high in minerals.

Gordon Fellows
for Mineral Analysis only
Suburban Experiment Station, Beaver St
Waltham, MA 02154

Henry Fleischman
36 Union St
Guilford, CT 06437
Contact person for sources for the Connecticut area

Laurence Lynch Co
Falmouth, MA 02540

Michigan Aggregates Corp
996 East Chicago Rd
Gerome, MI 49249
(517) 688 4414
This source is recommended by The Society for an Extended Ethic. [See *testimonials in SR #13, p. XX*]

The Notch (Lane and Son)
Rte 116
Amherst, MA
A source of traprock, very fine basalt that may be similar to San-Vita product in Austria used for regenerating forest in Brixlegg. The editor has had very positive results with it over a 2 year period.

Pacific Rim Soil Additives Unlimited
P.O. Box 60183
Fairbanks, AK 99706
(907) 479-8941

Peaceful Valley Farm Supply
11173 Peaceful Valley Rd
Nevada City, CA 95959
(916) 265 FARM

Yvonne Rado
P.O. Box 278
McKenna, WA 98558
Contact person for California, Oregon, Washington and the Western States for sources of gravel dust.

Tom Ringelmann
137 Utah Ave.
South San Francisco, CA
94118
(415) 872 2171

Trace Minerals Marketing
Organic Life Soil Min
300 Fremont #113
Las Vegas, NV 89101

U.S. Soil
Rick Arnold
7595 W. HWY 50
Salida, CO 81201
(800) 548-2560
(719) 539-6611

Fax (719)539-4936
East coast distributor:
Tom Whitesell
Star Route, Box 165A
Canton, NY 13617
A gypsiferous shale product, rather than hard silicate gravel dust.

Vulcan Materials Co

editor: This list was submitted by an engineer of the company familiar with what we are looking for. SR has not confirmed the quality of the sources listed.

Joseph H Scott
Wayne P Robertson
250 Maclellan Bldg
Chattanooga, TN 37402
(615) 266 4872

Cliff Kirkmyer
P O Drawer 1590
Manassas, VA 22110
(703) 631 2060

Mickey R Love
P O Box 4195
Winston-Salem, NC 27105
(919) 767 4600

J Lloyd Sentell
P O Box 7
Knoxville, TN 37901-6001
(615) 579 2903

John T Douglas
500 West Plainfield Rd
Countryside, IL 60525
(312) 482 7000

Dick Bade
1127 South Chicago Street
Joliet, IL 60436
(815) 726 5285

Daniel Roadruck
P O Box 5529
West Lafayette, IN 47906
(317) 743 2175

W Max Stephens
P O Box 80730
Atlanta, GA 30366
(404) 458 4481

Hal C Stokes
P O Drawer 8834
Greenville, SC 29604
(803) 2772371

Alan C Stanfield
P O Box 7324-A
Birmingham, AL 35253
(205) 877 3642

Pat D Kerry
P O Box 29310
San Antonio, TX 78229

For grinders

Roy Browning-Nash
for grinding equipment in the Southeast. Telephone (703) 920-1123

Grinders for lease at \$3500 per month. Grinders turn out 4-500 of very fine mesh rock dust a day at 600 mesh. If you find a large source of mixed glacial, river or ocean gravel that checks out with a pot test, and are ready to go into business, contact Gary Scott at (801) 358-6404 in Salt Lake City.

Hamaker Coordination

Update Remineralization Groups Worldwide

When Betsan Coats began speaking around the world she found many people who listened. Not only did they listen, they felt a strong commitment to do something—to be a grapevine for remineralization and the climate crisis.

Today it is a loose network of people, (decentralized, not an "organization") who support each other, circulate materials, send news of their activities and projects to Don Weaver's *Solar or Ice Age? Bulletin* and *SR* newsletter—along with news of other related events in their regions and countries. It is a growing community, a grapevine on

our beautiful earth which seems to grow smaller and more fragile every day.

Hamaker Coordinators rely on their own resources to get the message out—through mailings and correspondence, encouraging soil remineralization locally, speaking locally, writing articles, talking to policy makers in government and the media and whatever else they can think of!

Included here is a list of coordinators to contact for information and there are so many more by now who do these same things, with the same commitment and do not happen to refer to themselves as Hamaker Coordinators.



Center
for HC
in Spain

Accion
Ecologia
Social
in
Madrid

La Casa Verde

Central America

Edmundo Kandler
Apdo. 2569
1000 San Jose
Costa Rica

South America

Carlos Aveline
Rua Thomaz Flores 133,
apt 202
93000, Sao Leopoldo RS
Brazil

Maria Rosa de Garcia
Paul Harris 959
5600 San Rafael, Argentina

Maria Noemi Molina
Las Heras 1133
5600 San Rafael, Argentina

Eva Montaño
AA. 6305
Cartagena, Colombia
tel. 46579

Camilo Mazuera
Diagonal 109 #3-20
Bogota, Colombia
Tel. 46579

Africa

Mrs. Kathy Brookes
Wigespruit Fellowship Ctre
P.O. Box 81
Roodeport 1725
Transvaal, South Africa

C.A. Bunton
Box 22023 N3
Kloofsig 0034, Pretoria
South Africa

Asia

Geshe Achok Rinpoche
The Tibetan Library
Dharamsala
HP 146215
N India

Nilam Pandey
Director Sungava Trade
P.O. Box 3485, Links
Kathmandu, Nepal

Mr. Chimanbhai Patel
27 Sapato Colony
Baroda 390005
Gujarat, India

M.C. Pereira
CIDSE-PNH
c/o Indoswin Ltd
Suite 1102B, 11th Floor
Durit Thani Office Bldg
946 Rama 4 Rd
Bangkok 10500, Thailand
(for Cambodia)

Australia and New Zealand

Ms Alex Alexander
The Trees' Office
Camelot Court
61 Bulcock Street
Caloundra 4551
Queensland

Chris Farmer
14 Silica St
Lightning Ridge 2830 NSW

Cheri Foale c/o Post Office
Aldinga Beach
South Australia 5173

Vernon Lawrence
EMS
GPO Box 473 D
Melbourne 3001, Victoria

Steve Mellor
Acres Alive
RMB 1105
Wodonga 3961, Victoria

Barry Slogrove
M.S. 591-6 Beenham Valley Rd
WOLVI VIA GYMPIE,
Queensland 4570

Frank Scarf
36 Mountview Avenue
Hazelbrook NSW 2779

Sheena McDuff Stevens
The Grain and Salt Society
c/o Post Office
Pioneer Village 7264
Tasmania

Keith Gray
Ngakura
R D I, Rotorua, New Zealand

Europe and G.Britain

Accion Ecologia Social
Manuel Valero
C/ La Palma Alta 34, Local 6
Madrid 28004, Spain

Maria Felsenreich
Hochwaldstr. 37
A-2230 Ganserndorf-Sud
Austria

Madame Julia Lemee
3 Rue Corneille
Paris 75006
France (for China)

Renate Meier
71 Bois-Chapelle
1213 Onex-Geneve
Switzerland

Eileen Noakes
East Leigh Farmhouse
Herberton, Totnes
Devon TQ9 7SS
Great Britain

Harold F. Lane
20 Freshers Point
Isle of Lewis PA 86 0HE
Western Isles, Scotland

Mark Fielden
182 Holland Rd
London W14 8AH
United Kingdom

Letters and Forum

International News

Remineralization in Turkey

My name is Kemal and I live in Turkey. I went to college in the States (1981-85) and it was back then that I was introduced to environmental issues and other related such. One of them was of, of course, remineralization via rock dust. It's been a dream for me ever since I came back to Turkey to introduce remineralization and perhaps even build a business around it. After having completed my military service, I decided to try adding rock dust to my small garden at our summer house. I gathered the material from the Black Sea coast, which is north of Istanbul. It was carried away from surface coal mines by trucks and some of it fell off during transportation and got powdered by the trucks going over it. So I was lucky to find finely ground stuff, which I believe is loess (claylike material of glacial origin). I applied it to my garden and without the use of chemical fertilizers and insecticides or pesticides I was able to grow good quality and superb tasting vegetables. This personal experiment was able to convince me of the effectiveness of rock dust in agricultural practices. However, I feel that strictly scientific experiments are needed to convince people and to promote a successful rock-dust business.

This spring I was very lucky to meet a man who owns a fire-brick factory. As you may know, the materials used in making fire-brick are finely ground rocks and clay. His plant has all the facilities necessary for grinding rocks as well as the necessary equipment for analysis. I introduced him to remineralization and he became very enthusiastic in a very short time.

The past week I had him prepare a mixture which would get close to the composition of the dust which was accidentally spread over the trees in Austria with very good results following. This accident is detailed in one of the *Solar Age or Ice Age?* bulletins. Our composition is as follows:

SiO ₂	67.31%
Al ₂ O ₃	18.27%
CaO	7.17%
Fe ₂ O ₃	4.83%
TiO ₂	1.02%
Alkalies	2.27%
+ Trace Elements	

The reasons for coming up with such a composition is as follows:

1. It is similar to the composition in the Austrian accident.
2. Afterall it is one of the many possible combinations from the locally available materials.
3. The cheapest materials were chosen.
4. Materials relatively easy to grind were chosen.

This material was applied to 16 different one square meter plots as follows:

- 2 control groups (soil with no additives)
- NPK added (50 grams per square meter plot)
- manure added (1 kilogram)
- 250/500/1000/2000/2500/5000 grams per square meter plot
- each of the above amounts plus manure (1 kilogram)

The above quantities translate to 250 kg/dinnem or, 1000 kg/acre, 500 kg/dinnem or 2 tons/acre ..., etc. up to 5 tons/dinnem or 20 tons/acre.

The plant chosen is pole beans for its being well adapted to the climate and maturation period of only 40 days or so.

There are 16 one meter square plots arranged in four rows of four plots each, with 2 meters separating the plots. The 2 meter spacing between plots is to ensure that the plants do not feed from the neighboring plots or the materials get carried to other plots by watering (actually, it is impossible to avoid such effects; we hope to at least minimize these effects).

Around 50 seeds were planted in each plot to check for germination, percentage and time. Plants will be thinned down to 16 per plot after germination.

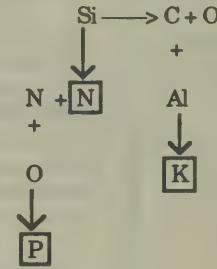
Plants will be monitored for growth rate, general appearance, average height, average leaf length, average yield, size of the fruits and the like. The data thus collected will be analyzed and conclusions drawn as to the effectiveness of the material in obtaining higher yields and healthier plants with no pesticides or insecticides.

Despite all the above precautions taken, I do not consider this experiment strictly scientific. We have decided to grow radishes in plastic bags to ensure maximum control over given conditions and outside influences. This experiment will be started this week.

We have also contacted an agricultural engineer to guide us in these experiments. He works for the government and said he would support us and provide us with an official paper on the effectiveness of our material if the experiments are conducted according to his directions and if the data supports our claim or claims.

We are also planting watermelon on 10 dinnems of remineralized soil. It will be interesting to see the results. In addition, we have applied the dust to the many fruit trees and pine trees on the grounds.

You probably know of Kervran's studies on biological transmutations. He states that elements are transmuted by microorganisms and plants (and animals and humans, of course) which should be realized as being highly important in agriculture. Here is a chart I came up with according to his book:



Silicon and Aluminum can theoretically yield NPK, hence no need for chemical fertilizers. (*Note that Silicon is almost double that of Aluminum in our composition:

SiO₂ = 67.31%; Al₂O₃ = 18.27% — therefore, Al = 36.59%

I have a strong conviction that this reaction does happen in the soil and/or the plants. This is one of the main reactions. There certainly are many other ones furnishing the plants with all the necessary elements for sustenance and growth.

Accordingly, we are planning to set up a rock dust business. There are around 140,000 dinnems of greenhouse land in Turkey, not to mention the millions of dinnems of agricul-

tural land. Around 200,000 tons can be sold to the greenhouse owners alone! So one can see the potential. I feel that our product should at least double the yield to be able to sell. Well see....

I wonder what is going on with remineralization in the States. I would appreciate it very much if you could write me a short letter and send some brochures, articles, etc. News, suggestions, test data and results, etc. are all welcome.

Thank you so much for your attention and sincere help.

Kemal Pince
Istanbul, Turkey

Greetings from Japan. As you know I have been on internship in India, where I have been experimenting in and learning as much as possible about natural farming. I am now temporarily in Japan to visit the natural farm of Masanobu Fukuoka.

It was my great fortune while in India that the coordinator of the rural centre where I was interning had a copy of John Hamaker's *The Survival of Civilization* and had for some time wanted to do some soil remineralization experimenting. The results that occurred were much less than expected or desirable, and I need help to learn what went wrong. Margaret Flynn wrote in a 1986 article in *Healthful Living* that "results [in soil remineralization] to this date have proven successful, both here and in other countries." My story is not a success story, but I think we have to be willing to acknowledge successful and unsuccessful results both. My experiments in soil remineralization were to prove to myself that soil remineralization could be used in Africa, where I plan to work with women farmers after my graduation from the School for International Training in Vermont. The disappointing results have left me skeptical—not because the value of soil remineralization but because I don't know what went wrong. I need help to discover this.

On January 9th, the farm manager of the rural centre and myself set out to locate appropriate gravel to have crushed for my experiments. He knew of a rock crushing facility about 40 kilometres away. From my exposure to the SR newsletter and Hamaker's writings I had a pretty good idea what I was looking for. Communicating this to a Hindi speaker who spoke but little English was not so easy. First he took me to an historic rock formation where there were many rock scatterings. I didn't like what I saw. All the scatterings were of the same type: a sort of soft, red shale. I explained to Mirdha that to obtain a balance of minerals, one needs a mixture of gravel, but we took a sampling. Nearby we checked out another rock bed and gathered a sample; there were more mixes here, but I was still not satisfied. I noticed some mixed rocks in the pavement on which we were cycling and called Mirdha's attention to it. He said a black shale was used for pavements, but that the rock I held in my hand could be found at the river. I asked if I could see it. He said yes. He then guided me to where I could see a pile of the black shale used in paving—not what I wanted. We returned to the centre, where he called a young man to cycle with me to the riverbed four kilometres away.

On arriving at the river, which was low due to the dry season, I was delighted with what I saw—an entire bed and bank covered with a beautiful mixture of rocks. It looked and felt wonderful; even my guide could see the difference in color and texture. We collected a large sample, waded a while in the river and returned to the centre. We also collected some fine sand for analysis, as I wanted to prove to myself that sand is not equivalent to rockdust. I felt I had the answer to my previous question concerning the mineral content of sand, from my reading of *The Survival of Civilization*. I assume weathering has already depleted sand of its mineral content, but I wanted an analysis.

On January 11th I began pounding rock samples for analysis. I began by using a hammer on the larger pieces. As they got smaller they began to fly away from me, so I put them in an iron mortar and pounded them with a pestle, as I would pound wheat. I pounded each sample into a powder, using my kitchen sifters to get it as fine as possible. It took a lot of hard work, but I ended up with four small cloth bags of rock samples, the largest being the riverbed gravel. On January 13th, the farm manager and I took the bus to the state research station to have the analyses done. We also took a soil sample. The results were promised in four to five days, but it was clear to me from a view of the facilities that the equipment was not in good condition. I felt it best while waiting to go ahead with a pot test.

On January 16th I carried good soil in from my two experiment plots and mixed it with rich manure raking from the dairy. This I put into two large clay pots. I then removed about four inches of the soil from one pot and added about a cupful or more of rock dust. I had to pound more rock, as I had given all the dust to the test lab. When pounding, it was necessary to wet the dust to ever so slightly to prevent it from blowing away. As it takes a lot of time to pound by hand, I left the rock dust overnight in the iron mortar in this damp condition. I noticed the color of the dust was more red than had been the gravel sample I had turned into the lab. This concerned me. I wondered if it had taken up some of the iron from the mortar. But it was all I had without going back to the river, so I used it. To prevent the minerals in the rock dust from leaching, I watered the soil in the pot well before returning the remineralized top four inches to the pot. The next morning, the pot without the gravel dust seemed more moist than the one with the dust, despite this initial watering.

On January 18th I scattered mung bean seed into both pots, mulched both well with rice straw and watered both. By January 21st, some seeds had sprouted.

Early on, the pot test was a disappointment. I had thoroughly expected the remineralized pot to take off ahead of the other. In fact, one half of the soil remineralization pot didn't sprout at all. At first I thought it had been eaten by squirrels and I covered both pots with screening. The seedlings that did come up compared favorably with the control pot initially, but were by no means better.

Meantime, the lab test results proved disappointing. The lab equipment is broken down. A week after the promised date I finally got some minimal analyses, but not knowing what to look for I could not tell much from them. What I got was pH, conductivity, organic carbon content, nitrogen and phosphorus. A copy of the results follows.

Sample	pH	Conduc-tivity	Organic carbon	Nitrogen	Phos-phorus
soil	7.1	0.4	0.495	80	11.62
rock form- ation	7.1	0.4	0.090	19	14.52
rock bed	7.3	0.2	0.105	19	29.05
river sand	7.4	0.2	0.105	19	26.15
mixed					
gravel	7.2	0.6	0.165	38	32.68

I made the decision to go ahead with my natural farming experiments without the use of rock dust. As it turned out, I am glad I did. Both my test plots were planted with legumes. A friend suggested to me that legumes grow better in bad soil than in good and maybe the soil in my test pots was too rich. He suggested other pot tests using vegetable seeds. However, I was never able to pound any more rock, and attempts to get large quantities to the crusher were never successful. I finally had to stop making excuses for the pot test and accept the fact

that the rock dust was not beneficial. The plants' leaves of the remineralized pot turned yellow and were infested with insects—an indication of imbalance. The other pot remained healthy and flourished.

I wanted to bring back gravel samples and soil samples with me, but luggage weight requirements prohibited it. I did not find time to mail samples by surface mail, but could still do so by sending money to cover postage to friends of mine at the centre. This would be expensive for even surface shipping.

I would appreciate any help your readers can give me. At this point I would be afraid to try soil remineralization. I cannot imagine finding any better gravel than was available in India, and until I know why it was not suitable I am reluctant to try again. Am I the only person who has not had good results from a soil remineralization pot test? Shall I go the expense of getting samples for crushing and analysis here in the States?

I will be back in Vermont April 16th. Any response to my letter can be mailed to me at the School For International Training, Kipling Road, Brattleboro, VT 05301. Thank you for your assistance.

Marian Rose
Brattleboro, Vermont

editor: for John Hamaker's response see "Making Pot Tests" on page 4.

I wish to thank you very much for your *SR* Network Newsletter, Fall/Winter 1988. We left Pietermaritzburg 4 years ago, back to Durban in this flat where I have not a gram of soil to cultivate. Even pot experiments are impossible here. In any case I will soon be 87 years of age. However, I have written a "recapitulation" that I will send you in June next—for the moment it is in Zimbabwe at my daughter's place. She is a keen gardener and has got rock dust (dolerite) sent to her by train from Pietarmaritzburg. Kindly tell my thanks and regards to Messrs. Hamaker and Weaver whose *Survival of Civilization* I take pleasure in re-reading. With many more thanks for the Bulletin and for the next issue I am expecting.

I. d'Hotman deVilliers
Durban, South Africa

I continue to be inspired by SR. Reality is such a hard paradigm to digest.

I was pleased to see the long letter from Jan Brewer in my latest *SR* (Fall-Winter '88). Jan has been an old friend who is quite a genius at an engineering/agricultural level. Unfortunately, he is a guest of the State of California for a while.

We have experimented with rock dust and sea shell dust on our gardens and orchards without spectacular results. I suspect that we just have not used enough.

The article from fellow New Zealander Keith Gray was certainly inspirational. I will use his formula to see if it will work on our peach trees which also have curly leaf.

I'm renewing efforts to secure some kind of rock grinder. It is obvious to me that we really have no choice but to grossly up-grade our soil fertility levels. I'll use Keith Gray's formula with the addition of fish emulsion, sea water and sea weed.

News has finally leaked to the press that New Zealand is totally down in wheat production (less than 12% of needs). This is due to the devastating drought being felt in Southland and manipulation by our local New Zealand/Australian grain milling monopoly.

We have 3 families living on this farm and we all look forward to our copies of *SR*. Your work is greatly appreciated.

Earl Conroy
Motueka, New Zealand

In the U.S.

The questionnaire below concerns the fertilizing properties of the byproduct from asphalt plants called "minus 200" or "fillerdust" for farm, garden and wilderness alike.

Quarrymen may have noticed how quick a filmy layer of green slime forms on fresh dust in warm puddles, becoming a curly crust when dried out. We are like and dependent on such single celled organisms from the opposite side of the food chain, for all of us thrive at least physically on the intimate proximity of full spectrum minerals (dry oxides), water (wet oxides), synthesizing sunlight and air in a natural balance.

I mean to bring the organic life supporting qualities of this gravel dust to the attention of food producers located within reasonable distance from available supplies, with primary focus on organic farmers, since the rock powders will be "organized" quicker in their more active soils, not to mention their minds being of a more discerning bend in regard to this eminently basic natural fertilizer, the general demand for which has been filled with mineral flours constituting only a small segment up until now.

These "soil-amendments" as officialdom has it are so far made from basalts, granites, lava, and ancient seafloors in most cases.

Paradoxically enough, mixed rock dusts as found in glacial deposits have not even reached that status of establishment, considering Nature's most fertile soils are made up from gravelmeals and organic matter in a wide variety. Glacial gravel pits will therefore receive our special attention.

Supportive enthusiasm and derogatory denigration can be culled from writings on the subject during the last 100 years in analogous vein and proportion as is in evidence for money reformers versus mainstream economics. I for one make my stand in favour of circulating fresh currency in the true coin of the realm which gives credit for new seasons of healthy growth.

Questions for the Quarries:

Do you have a surplus of minus two hundred and if so at what rate of average and/or peak production?

Which types of rock are crushed (analyses or geological surveys welcome)?

If you sell it, what is the price, if not, how is it stored or disposed of?

Are you willing to transport it to the farmers for free or at a price?

Questions for Farmers:

How much landsurface would like to try it on; is this woodland, pasture or farmland?

In case of woodland, how accessible are they by truck or wheelbarrow?

Which soil types do you sport out there; are they heavy or light?

Can and will you pick it up, spread it and monitor the results with pictures and the like or will you need help with all or part of this?

Do you use organic fertilizers like manure and compost and if so at what rate and price?

Do you have previous rock dust experience?

Application rates vary from one to twenty tons per acre once every year or up to ten years, depending on cultivating practice and organic matter. In general the lighter soils take to it fast due to instantly improved water retaining capacity, heavier soils like it in their compost.

Depending on the response to this coordinating effort, pelletizing to facilitate application of the larger surplus dust quantities in demand can be handled on local nonprofit basis with new research and evaluation by independent scientists as, if and when funds are forthcoming.

For background information to help you think all the way from the dark and dense inertia of rock through to the colour and scents, not to mention uncommon tastefulness of quality produce, you may turn to ACRES-USA 10008 E. 60th Terrace, Kansas City, MO 64133; Soil Remineralization, 152 South Street, Northampton, MA 01060; Solar Age or Ice Age bulletin, Box 1961, Burlingame, CA 94010.

Piet Bouter
Olympia, Washington

I've been busy juggling my professional life and alerting various friends about mineralization, etc. and showing the documentary everywhere I can.

Many, many thanks for all the bulletins, pamphlets, etc. Enclosed my check to cover them plus a subscription to continue receiving the newsletter. All the information is great!

Interesting note: after showing the documentary to a group of people, a man approached and told me he was a member of the board of the National Rifle Association and asked how I felt if each of his 10 million members, upon receiving their annual license, were given a 5 or 10 lb bag of stone dust to strew about when they went hunting in the forests. I told him we would bless him (it was not the time or place to also tell him to have them leave their guns home as well). Now of course the problem is to find the place or places where the stone dust can be available.

At the moment I am waiting for my order of *The Survival of Civilization* and getting ready to show the documentary this week to a group of healers and nutrition people.

Again my thanks.

Rod Colbin
New York, New York

This is to let you know I appreciate your newsletter and am looking forward to the next issue.

In my individual effort to re-green the planet, I started last year to grow trees from seeds collected around my apartment complex. Over fifty sprouted and I now have 25 - 30 maple seedlings that need a place to be transplanted to (I have successfully grown trees as bonsai and replanted them normally). I would appreciate any suggestions as the people I currently have spoken to think I have lost my balance. I would like also to get in touch with other persons interested in reforestation in the Chicago area.

Andree M. Dewez
Chicago, Illinois

I have given a small presentation on the coming Ice Age and soil remineralization at my daughter's school. A very small group but people were so impressed by the seeming simplicity and overwhelming benefits of remineralization. Are there any machines available to buy? Do you have any sort of practical guide, list as to other sources, how to do it, etc. that I could copy and distribute to them? Are there any sort of glossy advertisements for rock dust? (I know it sounds silly, but sometimes such methods are the only way to reach certain people.) Please let me know.

Linda Krausen
South Pasadena, California

Just finished the Spring '89 issue of the SR newsletter. It gets the adrenalin going, that's for sure! We are moving soon to the Pacific Northwest and hope to join or start a network there.

I got a refund from Mark Williams for undelivered rock dust. We waited in vain for over a year. He was very understanding, however. When he gets his "trip together", we'll try again.

Are you familiar with the monthly newspaper called ACRES, U.S.A.? There are wonderful first hand experiences of organic farmers in it and lots of sources for many items. I see your last issue mentioned a product called "Body Toddy". It is super! The cost for me as a distributor is \$18/quart. Well—an ad in ACRES U.S.A. reads: "Lovers of Body Toddy: we've found the same stuff with a different name, Mivita, from the same family at 1/3 the price! \$30/gallon plus \$4.50 postage and handling or a 4 gallon case for \$100 plus \$10 p&h." Inquire RSA, PO Box 866007, Plano, TX 75086. ACRES U.S.A. has a terrific book and tape catalog also. Hope I've been of some help in spreading the word. Will continue...

Judith Lashley-Roberts
Bradenton, Florida



Raised beds—backyard section of the Roberts garden. Yes—These beds have rock-gravel dust. Mammoth Melting Sugar Pod Peas (from Abundant Life Seeds, Port Townsend, WA) at least 8 ft. high. Delicious! Especially fresh and raw.

Letters continued next page

The Network

Subscribers are invited to join the listing, so please let us know so we can include you. Listed in one issue each year, each subscriber receives all the issues of the year.

Phil Barnette
Star Route, 157 Cedar Creek Road
Black Mountain, NC 28711
(704) 669-2814

Gary Clausheide
PO Box 389
Putney, VT 05346
(802) 387-4429

Part time farmer (organic grains and dry beans) interested in remineralization and starting farmer/consumer cooperatives.

Andrew Kozlowski
54 Canadian Avenue
London
SE6 3BP England

Bruce Miller
331 Palmerston Blvd.
Toronto, Ontario M6G 2N5
Canada

Organic farmer involved in milling equipment.

Jane Norton
Rt 1 Box 171 B
Durham, NC 27705

Society for an Extended Ethic
Debra C. Vuckovich
1139 Woodside Trail
Troy, MI 48098
(313) 828-4179

B.J. Tudja
Apartado Postal 445
Pátzcuaro, Michoacan
Mexico

Waiora Mara Farm
Earl Conroy
Graham Valley
RD 1, Motueka,
New Zealand

A healing community of trained naturopaths, chiropractors, midwives, biodynamic agriculturists, biogenic nutritionists, using photon-field radionics for diagnosing human/soil/plant problems and using these energies for healing.

Letters and Forum continued

Thank you for teaching us about remineralizing God's earth. Your uplifting lights give me great hope for the renewal of our earth and its creative energies when news media flood us with discouragement. Thank you for this ray of hopefulness. Now, to cooperate!

You'll be pleased to know that, as suggested, I tried some rock dust in a few potted plants this past year. What happened?

Some people who see our plants praise me for my "green thumb". Growing up in Boston, I know nothing of planting but I tried re-potting a few poinsettias and people can't believe they still thrive beautifully and lushfully. And some who claim to be "experts" in gardening said to me, "But they are supposed to be resting. They're not supposed to be living and growing today or flowering." "But they are alive, aren't they?" I responded.

I obtained some rock dust from a local quarry, just a few bucketfuls. When I douse the power of this rock dust for plants, I am amazed at the tremendous energy flowing. Check for yourself.

I am learning to bless and appreciate our plants, the animals, the insects, the mice and worms. Are they not all our brothers and sisters in God's kingdom on earth? I should say, are we not all brothers and sisters?

Also, when I found some rats eating away fruit in a fruit-bowl about 5 years ago, I was on the verge of using poison and trap but I had just learned that we are brothers in the kingdom of God, and must honor them and not use violence but invite them to leave and go where they belonged to their own home, not trespass on our home. They honored my invitation.

Some bees have taken residence in our eaves; I asked them to leave. They remain, but harm no one. I feel they are telling me, is it not right to share your home with us? We do not trespass or violate your privacy.

We have a farmer utilizing about 12 acres here. I am hoping he will listen to this word on remineralization. When he told me he soaks the corn-seeds in some herbicide (killer of herbs), I was shocked. Grass would not grow in one field the next year. I ask your prayers that he read this letter on rock dust and apply it to the field.

Thanks for listening.

Father Philip Kelly
N. Dartmouth, Massachusetts



Whatever its shortcomings, ERBE has certainly put clouds on the map. Now the critical point, as *Science* editor Richard Kerr implies in his editorial on Ramanathan's study, will be to determine whether cloud-climate changes could bring about unforeseen consequences: "as greenhouse gases change the climate, the clouds will presumably change, in turn altering the climate. Cloud areas, altitudes, proportions by type, and water contents could all change, in the process altering the radiative fluxes in and out of the climate system." (*Science*, 1/6/89, p. 28). Change indeed, but how will clouds change?

Most official reports to date have failed to recognize that the greenhouse effect itself, by accelerating the evaporation of tropical oceans, is directly increasing Earth's cloud cover. Studies show that global ultraviolet radiation has significantly decreased and cloud

cover has increased in recent decades (*Science News*, 2/20/88). While clouds in "normal" quantity may contribute to a benign greenhouse effect—keeping the planet moderately warm, as it has been since the last Ice Age—clouds in excess will surely reflect more sunlight and increasingly cool Earth's surface. Hamaker's model predicts that the clouds' pole-ward movement will increase, resulting in more precipitation to feed the glaciers and polar ice.

Interestingly, Ramanathan's group did acknowledge that during past glaciations, changes in the "cloud-radiative forcing" (forcing solar energy away from Earth), together with shifts in cold ocean currents, . . . could have significantly amplified oceanic cooling and continental glaciation." What they fail to consider, however, is that clouds may have been the seeds to the glaciation process in the first place.

For all its technological brilliance, modern science remains a victim of its

own "flat earth" worldview, a linear, mechanistic perspective which seriously undermines the integral, self-regulating nature of the global climate system. Meanwhile civilization may be standing in the ominous shadow of another 100,000-year Ice Age. As responsible beings we can no longer afford to cater to the cloud-free projections of a 50-year warming trend. Failing to adopt intensive restoration measures could spell global suicide by the year 1995.

* This article was adapted from an article published in **SOLSTICE: Perspectives on Health and the Environment**.

1989 Subscriptions

It continues to be more practical to ask subscribers to renew at the new year and make sure each new subscriber receives all the copies of the year. You may have a complimentary copy and then find it is part of your subscription. The 3-4 copies each year include all those who wish to be in the network listing and *How To* articles do not need to be repeated in every issue.

Rather than a commercial newsletter, **SR** is a community grass roots network that stretches to every continent. Writing is contributed by the editor and others of the network. Single copies are available for \$4.00. The aim is to network around the world where remineralization can offer ecological self sufficiency in place of dependency on unhealthy chemicals, pesticides and herbicides. Remineralization needs to take place worldwide.

Printing a newsletter with a small circulation is relatively expensive per issue. If you feel you cannot pay \$12

or \$15 for a subscription, contact **SR**. This newsletter, as much as possible, is available to all those who wish to receive it. If you wish to exchange publications or you have some other exchange/request for a subscription, please contact **SR**.

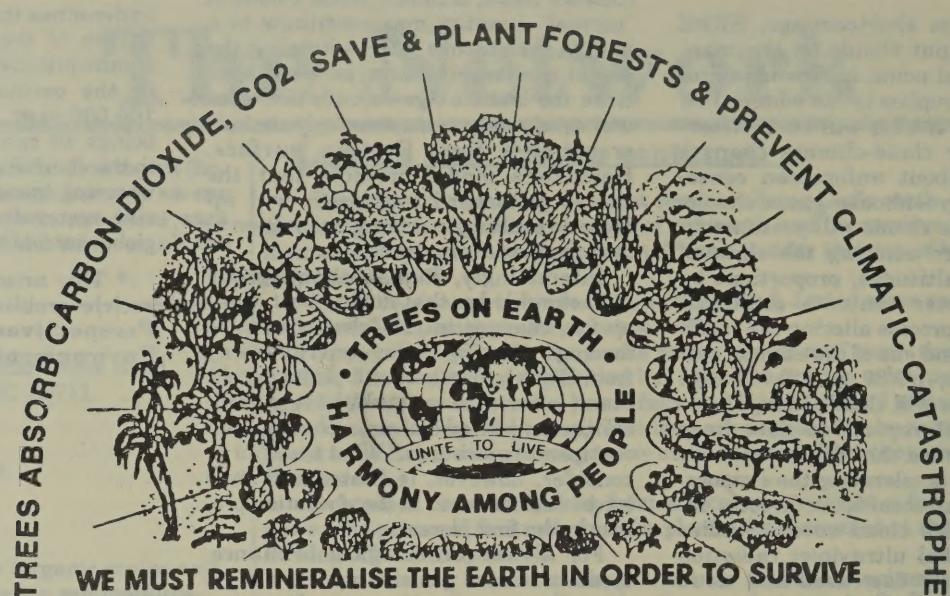
Thank you, readers, for your contributions: results of remineralization, photos, articles, experiences, and initiatives on a local or larger scale, be they commercial or cooperative—**SR** is the reflection of all of you out there!

Subscriptions 1989

I would like to receive *Soil Remineralization, A Network Newsletter*. Enclosed is a check made out to "Soil Remineralization" for \$12.00 (Bulk Mail) or \$15.00 (First Class). Subscriptions outside the U.S. cost U.S. \$15.00 (3-4 issues). Single copies are also available on request. Send to **SR**, 152 South Street, Northampton, MA 01060.

Name _____ Phone _____
Street/Box _____
City _____ State _____ Zip _____

Would you like to be part of The Network Listing? Yes No
A brief description:



WE MUST REMINERALISE THE EARTH IN ORDER TO SURVIVE

WITH FINE-GROUND RIVER, SEA-SHORE AND GLACIAL GRAVEL AND FINE-GROUND MINERAL-RICH ROCKS FROM MOUNTAINS IN A NATURAL MIX, REMINERALIZES AND REGENERATES, THE SOIL, STRENGTHENS GROWTH AND RESISTANCE TO POLLUTION AND ACID RAIN IN TREES, INVIGORATES ALL PLANT LIFE AND GREATLY INCREASES THE NUTRITIVE VALUE IN FOOD.

HAMAKER CO-ORDINATION

See "The Survival of Civilization" by John Hamaker and Don Weaver.

Available from P.O.Box 1961, Burlingame, CA 94010

BOOK US \$12 INCLUSIVE OF POSTAGE. AIRMAIL POSTAGE EXTRA.
INFORMATION CONCERNING REMINERALISING THE SOIL IS ORGANISED
ON A VOLUNTARY BASIS. WE CAN ALL HELP TO SAVE OUR EARTH -
PHOTOCOPY THIS PAPER AND SEND IT TO YOUR FRIENDS

SOIL REMINERALIZATION A NETWORK NEWSLETTER

Joanna Campe
152 South Street
Northampton, MA 01060